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General Articles

THE DISEASES OF CAGE AND AVIARY BIRDS, WITH SOME REFERENCE TO THOSE OF FURRED AND FEATHERED GAME*

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(*Continued from page* 386.)

BALDNESS

Baldness or alopecia arising from unnatural shedding of feathers from various regions of the body, especially on the head and neck and vent, and not being renewed until after the new moult or not even then, is a very common affection in cage birds. It is particularly frequent in the foreign ornamental finches, canaries and bullfinches.

In certain breeding seasons, especially when the weather is continually wet and there is very little sunshine, baldness is very prevalent in canaries—more often in the German Rollers and, in particular, those of green plumage. In these Rollers there seems to be a predisposition to the condition. It is not transmissible to other birds of the same class, colour or variety. After the moult the plumage is regained, only to be lost again next breeding season. Probably this inherent tendency is, as in the light-coloured budgerigars, due to inbreeding with birds having recessive characters, but there is no doubt that faulty nutrition, such as lack of certain vitamins, plays a great part in its incidence. Unless birds are given suitable food or get a sufficiency of sunshine they become prone to it. Birds subject to this condition should not be bred from, especially from those of the same strain or family.

Not infrequently bullfinches, the foreign ornamental finches and other cage birds lose feathers surrounding the beak and covering the neck or back or underparts. This is liable to recur every year after they have moulted out well.

Alopecia should be distinguished from feather plucking on the part of the bird itself or that of its neighbours, seasonable moulting, soft moult, scabies, ringworm, lice, or other skin maladies in which the feathers are often shed.

The birds should be washed from time to time with a solution of sulphurated potash, composed of 1 part of Howard's granulated potassium sulphura, 1 part of green soft soap in 100 parts of boiling soft water. The dressing should be repeated at least twice a week. For the baldness confined to the head, such as is often seen in bullfinches, a 1 per cent. solution of lysol has a similar effect. The birds should receive privet berries, blackberries, haws, freshly-ripe docks and other natural foods when in season. Brussels sprout and green cabbage leaf is an excellent food as it contains compounds of sulphur and other mineral elements as well as vitamins. Raw carrot in a grated form may be mixed with the usual seeds.

French Moult.—This is a common malady in young budgerigars, especially among those bred in the seasons with short days and long nights, when they are not fed sufficiently often to render them capable of leaving the nest in the shortest possible time after being hatched out. In consequence of this they remain immature and imperfectly covered with feathers or with feathers that are shed before they have had time to reach maturity. Some think that the parents pluck the feathers when the young are in the nest, but this cannot be the true cause as the birds after leaving the nest and becoming isolated still have the same trouble. Probably lack of sunshine and exercise when the birds should have developed plays some part in its genesis. Budgerigars, especially those confined in cages, rarely take to food to which they have not been used and in consequence it is difficult to increase their stamina by other foods which have a greater nutritive value than those to which they have become accustomed.

Runners.—These are young budgerigars that cannot fly but can run rapidly when made to do so. They are generally of immature size and their feathers rarely develop to the normal size. In reality, their condition is somewhat similar to that of those affected with French moult. Most of them do not stand on their feet but rest on the metatarsus or, in other words, they adopt the plantigrade method of progression.

Alike in the case of French moult, of the runners and of baldness, the administration of thyroid extract in the drinking water may be adopted.

* Paper presented to the Central Veterinary Society at a meeting held in the Conway Hall, Red Lion Square, London, on December 5th, 1935.

Red Mite Infestation

This nocturnal parasite—*Dermanyssus avium* var. *canariensis*—is a very troublesome pest in the cage, bird room or aviary during the breeding and moulting seasons. It is largely nocturnal in its habits, mainly attacking the birds during the night and lurking behind the nest-boxes, behind and under the cage or in crevices or cracks in it, or in other dark places, in the day-time. The mite not only torments the birds, causing them to become restless and to peck themselves, but also sucks their blood during the night when they should be resting. When in very great numbers these pests, by sucking large quantities of blood, leave their victims anæmic and in some instances cause their death from anæmia. The parasite may also act as a vector, as in the case of bird spirochætosis due to *Spirochæta avium* var. *gallinarum*. Probably this anæmia is the genesis of the complaint termed "Going light" (*vide* p. 347).

They are more prevalent in hot weather and during the later stages of the nesting period. They can live without food for two or more months provided they can obtain moisture. It does not appear that they can thrive in tropical or subtropical countries, but they can in our climate in the winter months in warm rooms.

Metal cages utilised for a single bird can be disinfected by being placed in a hot oven or in boiling water, or in a gas oven with the gas turned on, for a short period. In the meantime the bird could be washed all over with the sulphurated potash lotion previously mentioned (p. 384). Derris root infusion or that of stavesacre can be used for the same purpose. This should be repeated twice a week. The nest should be dusted with powdered derris root, pyrethrum or cube root.

The cracks, crevices and edges of the perches and the area under the sand tray should be treated with oil of turpentine containing paraffin and 1/20th part of oil of tar.

Fumigation of the bird room when free of birds will quickly destroy the lurking mites but not their eggs. Chlorine, sulphur or formalin vaporised by a lamp or gas ring may be used, after the room has been made practically air-tight, for 24 hours. Creosoted wood when dry has *no* evil effect on the mites; they run over the wood as if it had not been treated. Various seed or meal mites are often found in seed or food pots or hoppers. They are apparently harmless to birds.

There are many species of mite of the family Analgesidæ that invade the feathers of birds and cause them to break off or to become frayed. The canary's feathers are invaded by *Dermoglyphus elongatus* and *Mégnina columbæ*.

Lice

The canary is sometimes infested with the grey louse, *Docophorus communis* Nitzsch, of the order *Mallophaga*, which invades the feathers and lives on the skin. A similar if not an identical louse infests budgerigars and other small birds. It is a large louse of an amber colour. A smaller, darker and more active louse also invades the feathers and skin of these birds, causing great irritation and worrying the victims a great deal. The larger louse is seen chiefly in canaries with heavy plumage such as the Norwich and Lancaster. Other species also attack various species of cage birds. They cause restlessness, especially during the night. Washing the birds with an infusion of quassia, or stavesacre or derris or cube root, or with a solution of sulphurated lime or potassium, twice a day, and disinfestation of the cages and surroundings will soon rid the victims of these pests. An infusion of either of these vegetable products made with industrial spirit will not only destroy the lice but also dissolve the gum by which the "nits" or eggs are attached to the feathers. A vinegar infusion of stavesacre may also be used. No pungent odorous agents such as oil of sassafras should be employed as they are liable to produce rapid poisoning. Oil of tar is another dangerous material.

Scabies

Canaries, budgerigars and other members of the parrot family, as well as other cage and aviary birds, are now and again affected with various feather and skin mites, which eat away the barbules or other parts of the feathers, especially the long ones of the wings and tail, giving them a frayed or broken appearance. Such feathers, especially at the root of the shaft, become bare and often break or fall out. There is constant itchiness, especially at night-time. Some species only invade the tube of the shaft.

The treatment is similar to that for red mite and lice. All birds in the cage or aviary should be treated simultaneously and the surroundings disinfested. In making microscopical examination of the contents of the intestine one often finds these mites, which the birds have picked up and swallowed.

Although the external mites may be destroyed readily, those living in the tubes of the feathers are difficult to deal with until the moult comes round, when the birds should again be treated for them. (*See* scabies of the beak and legs.)

Scabies of the Beak.—Scabies of the beak due to the parasitic mite *Cnemidocoptes* (*Sarcoptes*) *mutans*, which is similar to, if not identical with, that species which invades the horny covering of the legs, causing scaly leg in canaries, poultry, pheasants and other birds, occasionally attacks the beak of the beautiful ornamental finches such as the Gouldian Finch. The beak has a rough, raised or scabby or

coarse brownish appearance. When some of the scales are scraped off and soaked in caustic potash and then examined under the microscope the mites are discovered. Treatment consists in lightly painting the beak with paraffin oil every three or four days. A 2 per cent. solution of lysol also has a good effect. The cage, perches, etc., should be disinfested from time to time.

Scabies of the Leg or Scaly Leg.—This sometimes attacks cage and aviary birds but it is encountered more often in the gallinaceous species. The parasitic mite *Cnemidocoptes* (*Sarcoptes*) *mutans* invades the horny scales covering the legs, which become roughened or show thick or crumbly excrescences on the skin. Soap containing a small quantity of oil of turpentine or pure paraffin oil brushed on the parts twice a week has a very efficient effect.

The long canaliculated scales so often seen on the legs of old canaries and other cage birds, should not cause confusion with this condition; nevertheless, the soap treatment is successful in removing these grooved scales or cylinders.

Ringworm

Although not common, ringworm sometimes occurs in canaries, parrots and other cage and aviary birds; it is, however, by no means rare in the various species of pheasant. The affected parts become bare through the feathers falling out or breaking off and yellowish crusts form on the bare parts, especially those on the head, neck and back. It usually starts in the feather follicle and the root of the feather becomes encrusted with the yellowish crusts, which causes the feather to fall out. The condition is due to a variety of the mould or fungus *Trichophyton*, the spores and mycelia of which can readily be detected under the microscope when the crusts have been treated with caustic potash. The disease is contagious and the spores may cling to the walls of an aviary or cage for many years, even for 50 or more, unless it has been thoroughly cleansed and disinfected. It never occurs in birds or other animals that live a natural life in the open, but it is common in those that have been confined, especially during the winter months, when the weather is sunless, dark and wet. Direct sunlight in the open and living in the open on fresh, live food are inimical to its development. The affected parts should be brushed over with a weak tincture of iodine, a spirituous solution of salicylic acid or a watery solution of formalin (1 in 50) containing a small quantity of glycerine. Exposure to violet rays has a beneficial effect and so has fresh green food. The treatment should be renewed at least twice a week. The surroundings should be thoroughly cleansed and disinfected with boiling water containing 2 per cent. of commercial caustic soda.

"Lumps" or Feather Cysts

This disease, which was investigated by Dr. Hare, formerly Professor of Pathology at the Royal Veterinary College, London, is frequent in crest, crest-bred or plain head Norwich canaries. It was found by Dr. Hare to be a feather-cyst, to which he gave the name *Hypopteronosis cystica*.* These lumps are found under the skin, on the neck, shoulders, back and sometimes on other profusely feathered parts. The feathers overlapping these "lumps" do not regularly cover them but take a wrong direction. The "lumps" are hard and yellowish and are covered with a thin skin, which is transparent and shows under it the yellowish cheesy matter. They may vary in size from that of a hemp seed to that of a pea or even a filbert. They vary in number from one to five or more. Sometimes when the cysts are ripe their contents burst through the skin and escape, but they are liable to refill again. When mature the contents can easily be removed with a pair of fine-pointed forceps after the skin has had a wide incision made through it. Unless the internal lining of the cavity is destroyed with nitrate of silver the cavity is likely to become refilled. The cyst should not be incised until the skin covering it has become transparent, otherwise much hæmorrhage is likely to occur. Painting the interior from time to time with tincture of iodine brings about rapid repair. Thyroid extract may be given on a piece of soaked bread just before the moulting season. On no account should birds with recessive factors be bred from as the proportion of offspring with the disease will be increased.

Feather cysts sometimes occur in poultry, pigeons and other birds, but they rarely cause large lumps.

Uropygitis or Oil-Gland Disease

The uropygium or rump sebaceous gland secretes a greasy material or sebum with which the bird greases its feathers, which in the water birds and to some extent in the land birds renders them waterproof. In debilitated or anæmic birds such as canaries, this gland often becomes inflamed and the canal or sinus in it filled with a cheesy exudate, which is hardened and prominent and raised above the level of the covering membrane of the gland. The swelling should be incised and its contents removed. The interior of the remaining cavity should afterwards be gently touched with the fine point of a stick of hardened nitrate of silver so as to destroy the capsule to prevent it becoming refilled with exudate. A few days after this severe treatment the gland should

* Vide *Veterinary Record*, Vol. xi, No. 40, October 3rd, and No. 49, December 5th, 1931.

be painted with tincture of iodine and the process should be repeated every three or four days. A tonic in the form of sulphate of iron should be given in the drinking water of the larger birds and of citrate of iron and quinine in that of the smaller birds. Fresh green food should be allowed. If the debility is suspected to be associated with intestinal worms, oil of chenopodium or santonin in castor oil should be administered. This gland does not exist in some species or varieties of bird.

Conditions Affecting the Structure of the Beak

Overgrowth or Distortion of the Beak.—Overgrown beaks or bills are most frequently seen in parrots, budgerigars, starlings, blackbirds and occasionally in canaries and other finches or cage and aviary birds. In the parrot family the upper beak or mandible usually grows too long in its curvature, or in the case of many budgerigars and some of the smaller birds the upper becomes distorted and crosses the lower mandible, as is seen normally in the crossbill. In blackbirds and starlings the mandible generally grows longer in the forward direction. The condition is generally due to lack of use of the organ, through failure to give the bird something tough to whittle, by which means the mandible may be kept down to its natural proportions. Care must be taken in reducing the parts to normal as the vascular structures often advance with the overgrowth or distortion. If bleeding should arise it should be arrested by cauterising the cut surface with nitrate of silver or even with the pencil-pointed actual cautery. The deformity or overgrowth has a tendency to recur, and parrots should be given hard wood with bark to whittle, whereby the increase in growth may be checked.

In some birds, especially pheasants, and in some of the short-beaked pigeons, the upper mandible is often much shorter than the lower.

Flaky or Brittle Beak.—In old parrots the beak sometimes becomes hard, brittle, flaky, broken or elongated. The flakes should be removed and the overgrowth of both upper and lower mandibles reduced to normal proportions with a pair of sharp cutting shears or bone forceps and then smoothed down with a corn file until they resume a natural appearance. The trouble is likely to recur from time to time. Thyroid extract may be given on soaked bread and a variety of green food and thick green wood to whittle allowed. The condition resembles brittle hoof in the horse.

Atrophy of the Beak.—This occasionally occurs as a veritable enzoötic in canaries, many being affected at the same time and losing the point of the beak by wasting, when the bird has the appearance of being "snub-nosed." As to its cause, nothing is known. I failed to detect the presence of a mite or a mould. Painting the point of the beak with tincture of iodine or a strong solution of nitrate of silver should be tried.

Dry Gangrene of the Feet

In this disease the digits and even the metatarsal bone, or at least a part of it, turn to a purple or black colour, become cold and gangrenous and ultimately slough away, should the bird survive long enough for this to take place. It is mainly seen in canaries, several of which may be attacked in the same bird room about the same time. Until the parts become lifeless there is no inflammation in the non-affected tissues; indeed, the condition may be said to be nature's way of getting rid of the dead parts. If dry gangrene is recognised early, the foot or feet should be held in hot water from time to time in order to resuscitate the arrested circulation. Painting the parts with tincture of iodine might be tried. No knowledge exists concerning the cause, except that ergoted food or hairs or fibres encircling and strangulating the parts can be excluded in these outbreaks. A similar condition is occasionally encountered in poultry.

Sore Feet and Inflammation of the Toe and Foot Joints

Of frequent occurrence in canaries, nightingales and other soft feeding cage birds, these affections are generally a sign of malnutrition or the want of fresh vitamin-containing food. There is general weakness and anæmia.

In many instances the joints swell and the skin covering them often undergoes ulceration, while the toes or one or more of their sections or phalanges may slough off, leaving a short toe or no toe at all. In canaries, budgerigars and other birds with an aluminium ring on one of the legs swelling and inflammation of the part of the shank with which the ring comes in contact not infrequently takes place, causing pain and lameness and ulceration. The ring should be removed carefully, otherwise the limb is likely to be broken. The closed rings have to be cut with a very fine pair of shears or a very fine file; the unannealed rings can be opened with the finger nails. The inflamed or ulcerated parts should be painted from time to time with tincture of iodine.

Birds with this affection require grated raw carrot, finely-chopped Brussels sprout or green cabbage leaves, finely-minced raw beef, fresh ant cocoons, live spiders, meal worms and other live insects, fresh ripe berries, banana or other fruit. Hard-boiled, new-laid egg crumbled with sweet biscuit, cream and milk should be given from time to time, and to this may be added crude medicinal cod-liver oil.

Cleanliness must be strictly observed, the cages being kept scrupulously clean. The perches should be covered with rubber or waterproof as a palliative. The affected parts should *not* be bathed as is so frequently done. Exposure to direct sunlight or the violet ray has a very beneficial influence on the victims.

Joint-Ill or Infectious Arthritis

This is sometimes observed in aviary birds—occurring mainly in young birds approaching adult life—and may attack several of the same species at the same time. It is a serious malady in young pheasants soon after they are turned loose into the coverts for the first time.

For the most part the disease attacks the tarsal joints, which become swollen and filled with a sero-purulent fluid. Inability to stand on the painful limbs, loss of appetite and rapid wasting soon arise and death occurs early. It is due to various micro-organisms in the form of micrococci, staphylococci, streptococci, etc. I have even observed fungi of the genus Aspergillus in the pus.

Overgrown or Distorted Claws

The foreign ornamental finches and canaries are those most commonly affected. In some instances the nails grow so that they almost form a circle and in consequence the victims often get them hooked up on the wires of the cage from which they cannot disentangle themselves without assistance. Cutting the overgrowth in such a way as not to cause bleeding should be carried out from time to time. The distorted or twisted overgrown nails so often seen in aged canaries require the same treatment. In order to prevent this overgrowth or distortion the perches should be rough and wide so as to enable the bird to keep the claws down by friction. In broken nails the loosened part should be detached by stretching.

Slip Toe

This condition, which is common in young canaries, consists of slipping of the hind digit forwards under the foot so that it does not grip the perch. The cause is evidently a weakness or temporary paralysis of the extensor muscle, which expands the toe. The remedy is to draw back the digit and raise it behind the posterior lower part of the metatarsus, maintaining it in position by a short piece of rubber tubing, of very small gauge, similar to that used in an infant's feeding bottle. After a week or two the tubing may be removed, when it is usually found that the defaulting digit has recovered its capacity to function normally.

Broken, Dislocated or Paralysed Wing

None of these conditions is uncommon in small birds. They may be brought about by injuries received from other birds or by a wing getting caught between the bars or wires of the cage. In all three there is generally a drooping or falling of the wing, which in the case of paralysis is due to injury of one of the nerves supplying the wing with nerve force. If the injury has only a temporary effect the wing, after a short period of inactivity, may regain its normal function. In the case of an unseparated fracture, weeks may elapse before the bird is able to use it again. When there is dislocation of a joint, generally the humero-radio-ulnar joint, it should be reduced and repeated gentle massage applied. Displacement of the fractured end of a bone should be remedied by manipulation and, if practicable, the ends should be kept in apposition by gummed paper or thin, narrow adhesive plaster bound round the part. In the larger birds a plaster bandage should be bound round the trunk so as to prevent movement of the wings and to retain them close to the body. This is impracticable in parrots unless an aluminium ruffle is placed round the neck, for otherwise they would soon remove the bandage with the beak. In the case of smaller birds, if such treatment were adopted they would assume the dorsal recumbent position and soon die from starvation. Whatever form of treatment is adopted, however, the wing would remain drooping in many cases during the remainder of the bird's life.

To prevent the larger birds using the broken wing they may be made to wear a kind of waistcoat round the body with holes underneath for the legs to pass through. This procedure could also be adopted for birds of the size of a dove or pigeon.

Fracture of Bones of the Leg

Such fractures are not rare in any species kept in confinement. The injury is often occasioned by some of the spiteful parrots biting the limbs of other species in the same aviary or large cage; or by the bird getting a limb between the bars of the cage or wire meshwork of the aviary. Spontaneous fracture may also occur, as in the case of aged parrots or cockatoos suffering from osteomalacia or other forms of osteodystrophia. It is very frequent in young pheasants suffering from fragilitas ossium. In parrots this osteodystrophia is sometimes associated with fatty tumours on the surface of the abdomen or on the thighs and also with amyloid degeneration of the liver. Occasionally both femora or tibiæ are fractured at the same time.

The injured bird should be placed in a cage without any perches and if there is no separation of the ends of the fracture no other treatment is necessary, as in time in most cases the fracture repairs rapidly. When the ends of the bone are separated and overlapping one another they should be placed in line of con-

tinuity and maintained in position by a split piece of thin quill. Support should be given by strips of stamp paper or of wool dipped in gum wound round the limb. In larger birds the splints may be composed of aluminium, cardboard or other light material and supported by narrow adhesive tape until the ends of the fracture have united. In the case of parrots no splint can be maintained unless the bird is made to wear an aluminium ruffle to prevent its beak reaching the splint.

Osteomalacia or Fragilitas Ossium

This is sometimes witnessed not only in young but also in aged birds. It is evidenced mainly in the leg and wing bones, which may become so brittle that they snap to splinters on the least lateral pressure or strain on the long bones. The condition is very common in young pheasants four or five weeks old, when the bones are very thin. In old birds it occurs chiefly in parrots or cockatoos. The birds should be given phosphate of lime or bone flour with their food, which should contain bone meal or fish meal or ground silkworm pupæ, locust (insect) meal, locust (bean) meal and hound meal. For the insectivorous and frugivorous birds vigerostal, banana and grapes may also be given.

Rickets

Rickets or a disease resembling it is often observed in young budgerigars and other birds before they leave the nest. The limbs appear short and often distorted and are unable to bear weight. The wings seem powerless and thus the afflicted bird cannot fly; the feathers are stunted and do not mature. Rickets is a nutritional malady, and growth is checked. As the victims are not likely to be improved by treatment it is advisable to destroy them.

In the larger and heavier young birds the extremities of the long bones may be enlarged and not uncommonly they break in the shaft. The tendons over the joints sometimes slip into unnatural positions, rendering the victims hopeless cripples.

To prevent this disease in the smaller birds, they should not be bred out of our breeding season when the days are long and there is sunshine and warmth. Probably if budgerigars could be induced to consume barley meal with which has been mixed a small quantity of fish or bone meal and dried milk, this disease would not occur in their offspring. When they are in a large aviary with other birds they often mimic soft feeding birds and consume their food; but this rarely, if ever, takes place when they are confined by themselves in a small cage. The meal mentioned above could be rendered moist by grated raw carrot, pulped raw carrot or mashed boiled potato. Minced green cabbage or Brussels sprout leaves could also be added. For the larger birds seed grain or peas may be soaked in crude medicinal oil and given alternately with the meal.

Periostitis or Ostitis

Inflammation of the periosteum and bone occasionally occurs in the long bones of the wings and legs. After a time the bones and their covering become thickened and hard. During the progress of the trouble the bird becomes lame, seems in pain, is disinclined to move and dares not flap its wings. It wastes away, appears anæmic and eventually dies in a state of marasmus. On *post-mortem* examination, the affected bones are found enlarged and have a cancellated or porous appearance. The cause is considered to be a mineral deficiency, but this is not yet proved.

Tumours or New Growths

These are not infrequently encountered in cage or aviary birds. Although they occur mostly in aged birds, at no age does the bird seem exempt. They may be malignant growths, such as cancer or sarcoma, or simple, such as lipoma, and they affect any organ or tissue. Some of the sarcomata can be transmitted by inoculation, probably of the virus. Most tumours in adult birds, especially the parrot tribe, belong to the adeno-carcinomata. They are very frequent in budgerigars and usually attack the intestine, kidney, testicle, oviduct or ovary and in some instances invade the liver and lung. When in the abdomen they may attain a size from that of a small marble to that of a small walnut. They cause a bulging of the lower and hinder part of the abdomen and compress the other organs, especially the intestine, when there is not infrequently a diarrhœa which soils the feathers and skin in the vent region. Very often nothing is noticed amiss with the victim until a few days before its death, which is preceded by loss of appetite and dullness. They are of more frequent occurrence during the late winter and early spring months, but they may be observed at any time of the year. I have encountered this kind of tumour involving the kidney in the wild partridge.

In very old parrots or cockatoos large pendulous tumours are occasionally met with on the fleshy parts of the limbs or under the hinder parts of the abdomen. They are generally lipomata and therefore not of a malignant nature. When flabby and pendulous under the abdomen they are often mistaken for herniæ. Sometimes they are associated with amyloid degeneration of the liver or with bone dystrophia. Such birds are not good subjects for operation as they are very liable to die from immediate or delayed shock. Painting of fatty

deposits under the featherless covering with tincture of iodine has given good results in the budgerigar, where they are found mostly on the breast and hinder part of the abdomen. When tumours are found to be malignant the victims should be destroyed. Tumours or lumps on the head and neck often occur in confined wading birds; such a condition generally appears to be enzoötic. In an African grey parrot I saw a small swelling, between the branches of the lower mandible, which had been in evidence for some time and was very mobile. When the skin was cut through out dropped a grain of maize which had evidently got there by working through the tissues under the tongue.

Corns, Horns or Warty Growths on the Feet, Beak and Other Parts

Warty growths may be encountered around the nostrils, beak and on the legs of canaries, especially in some strains or families, such as the Lancashire, which is a heavy or clumsy type of bird; also in doves and pigeons. These are the eruptions of avian pox (for which see p. 348).

Corns, horns or warty growths are also not infrequently found in parrots on the mandible, under the throat, round the nostrils or eyelids, on the top of the head or affecting some other part of the body. They are generally tuberculous in origin.

Horns sometimes are found on the head and under the throat in canaries. They should be excised and the resulting wound gently touched with nitrate of silver to prevent bleeding.

Wounds

Wounds on birds are very rarely subject to infection, repairing readily if the skin is brought together with very fine sutures and afterwards painted with compound tincture of myrrh. The patient should be kept by itself so that the wound cannot be interfered with by other birds. In the case of the parrot, an aluminium ruffle should be applied to prevent the bird damaging itself. The less attention bird wounds receive, the more quickly they repair and disappear.

Anæsthesia

No class of vertebrate animal is so susceptible to the influence of gases, such as coal gas and carbon monoxide and the vapours of chloroform, ether or amylene, as are birds: they quickly succumb to them if inhaled too long or at too great a concentration. Birds are often used for testing for the presence of poisonous gases in coal mines, wells and channels and were also used for the same purpose in submarines. The reason for this susceptibility is that the surface of the respiratory system of the bird, including the trachea, bronchial tubes, lungs, air-sacs and the large bones, is very extensive, much more so than any other class of animal; also that they generally have a very high temperature, which in the case of smaller birds reaches as high as 112°F., and the beatings of the heart are more numerous. Nevertheless, the degree of susceptibility varies in many of the larger species. Chloroform will kill a canary or parrakeet in a minute or two, whereas it takes as long as 48 hours to kill a tortoise or some of the other reptiles.

For hens, or birds of similar size, a preliminary injection of 1/200th grain of atropine sulphate in 1 c.c. of warm physiological solution is made under the wing just before the administration of ether, which is continued until the operation is finished. As an alternative, scopolamine hydrochloride, 1/200th in 1 c.c. of saline solution, may be injected and 2 or 1 of chloroform and 1 of ether, or 1 of each, used for inhalation. For the birds of the size of a dove or pigeon ether alone or with equal parts of alcohol is often used. For the smaller birds chloroform or ether, unless largely diluted with alcohol, is dangerous: it is safer to use alcohol on a piece of cotton-wool held to the nostrils. Success depends upon the skill employed in administration and not so much on the means usually adopted. A jam jar or wide-mouthed bottle forms a useful apparatus for administering chloroform or ether to birds. It is costless, can be readily cleansed and efficiently sterilised and the movements of the head, beak and eyes of the patient can be readily seen through the glass when these parts are just within the mouth of the jar.

Local anæsthetics, unless merely brushed on the raw surface or mucous membrane, are not very safe, but no doubt with time means may be found by which their danger may be overcome.

John Snow details the experiments carried out by him with various vapour anæsthetics on small birds and other small animals in 1847 and 1848, in his posthumous work on chloroform and other anæsthetics and their action and administration, edited by Benjamin W. Richardson and published in 1858.

Administration of Medicines

Agents such as sulphates of magnesium and sodium, bicarbonate of sodium, iodide of potassium, bromide of potassium or borax may be given in the drinking water. Bismuth subnitrate or carbonate, chalk, kaolin, catechu, kamala or areca nut or santonin can be sprinkled on sweetened bread and milk for birds such as parrots and on moistened sponge cake for canaries.

Some medicaments such as castor oil, olive oil, linseed oil, liquid paraffin, syrup of buckthorn, of squills, of ipecacuanha or of quinine

may be administered by the mouth to small birds by means of a thinned match stick, a small probe or bodkin or a fountain-pen filler. To parrots they may be given by a spoon, or in the case of larger parrots through a catheter with a wide funnel end to which can be attached a small funnel. Syrup may be introduced into this and passed through the mouth and gullet into the crop, while the beak is kept open by a small mouth-gag of Gray's pattern. The medicament is poured into the funnel or forced into the catheter by a syringe. This is a useful method also for the larger birds and for washing out their crops when they become impacted with food or are the seat of ingluvitis or when they contain poison. Keeping birds without food or water for a period is likely to be an inducement to them to partake of medicated solutions or waters or foods.

Pills, capsules and tablets may be administered to birds, other than parrots, from the size of a thrush upwards. To most birds unpalatable medicines must be given by force. Where there is prolonged loss of appetite, melted Brand's essence of beef (jelly) or Oxo beef jelly, or full-cream condensed or ordinary milk should be forced upon the patients.

Hypodermic injections of saline solution or other medicaments must be used with circumspection.

Painless Destruction

Birds are very susceptible to such gases as carbon monoxide, coal gas and motor-car exhaust gas, and if they are exposed to any of them for a minute or two they rapidly succumb. It is not unusual for a bird-keeper to put the cage containing the bird to be destroyed into the gas oven, the gas being kept on for a couple of minutes. A safer plan is to place a piece of cotton-wool or rag in the bottom of a jam jar or tin canister, pour on to the wool or rag a teaspoonful of chloroform, put in the bird and cover the top of the jar with a duster or lid. Within two or three minutes the bird ceases breathing and the heart stops beating. The bird may, if one desires, be left in the jar for a few minutes longer before removal.

Some people without any sentiment either crush the skull, stretch or twist the neck or even chop off the head with a sharp knife to destroy the life of the bird.

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Discussion

Dr. Tom Hare, complying with the President's request to open the discussion, said that Mr. Henry Gray, though restricting himself to the diseases of cage birds, had covered a very wide field; in fact, he had endeavoured to present what the President had rightly termed a "book of reference." The Society should feel pride in the fact that Mr. Gray was the pioneer in the work on bird diseases in this country. (Hear, hear.)

Dr. Hare said that, ornithology having been his hobby since boyhood, he was delighted to become known to Mr. Gray a number of years ago: their association, which he was proud to recognise, had developed into a very firm friendship, and through that friendship he had derived a considerable amount of valuable information on the pathology of avian disease. He hoped the profession would take up this work more seriously in the veterinary colleges and in private practice.

A large number of problems in avian pathology were of great comparative value. One of the present stumbling-blocks to the study of these diseases, without the facilities of a laboratory at hand, was the difficulty of diagnosis and therapeusis. Diagnosis on the symptomatology was, to him at any rate, a very difficult matter. He thought that Major Dalling, whom he hoped to hear, would support his saying that not infrequently even by *post-mortem* examination one could not make a diagnosis without a bacteriological and parasitological examination. Of course, they were in the early days of avian pathology: as time went on and more research was done, no doubt many of those comments would need qualification.

He would like to refer to one side of the work that had been previously neglected but was of moment to his colleagues in practice, and that was the surgical side. Amongst his ornithological friends he had frequently met with the utmost distaste to destroying birds for what they regarded as preventable conditions, such as "egg-binding." Another operable condition, which was very common in certain varieties of canaries, was what he had termed "Hypopteronosis cystica," known to the fancier as "lumps"; and many canaries affected with this disease were very valuable show birds and the owner wanted to show them. He had one bird now which was a recent Crystal Palace winner, and it had since developed one of these "lumps" on its wing, and the owner would go to any reasonable expense to have that tumour removed and thus restore the bird to show condition.

For surgical conditions he had been forced to try and find a safe anæsthetic. He wanted to hear Mr. Henry Gray reply and tell them his experience. The result of his (Dr. Hare's) experience was that the best anæsthetic was chloroform administered by the open method. One had to be very careful with the hypodermic administration of anæsthetics to aviary-birds; indeed, at the least touch of the hypodermic needle, a canary might collapse dead in one's hand. Birds took anæsthesia very well provided it was administered properly. For example, for the removal of a large granuloma, which was obstructing the crop of a fancy pigeon, he had to cut away half-an-inch of the œsophagus and the roof of the crop; the bird was under chloroform anæsthesia for an hour and three-quarters and made an uninterrupted recovery. He frequently had birds under for three-quarters of an hour and canaries up to half an hour.

Sometimes cases of zinc poisoning occurred among newly-purchased birds, which had been put in cheap and poorly constructed cages. The zinc poisoning was due to the birds, having nothing to do in the unfamiliar environment, pecking at the little pieces of projecting solder and zinc where the wires had been improperly finished off.

He quite agreed with Mr. Henry Gray that what the fancier called apoplexy was *post-mortem* hypostasis into the diploe of the skull. This hypostasis, found on *post-mortem* examination, was due to the fact that in dying the bird almost invariably fell on to its back and that, as in other animals, the great amount of hypostasis occurred in the most dependant part of the body.

In conclusion, he would like to mention that some of his former students had been interested in birds and after graduating they made a success

with birds as part of their practice. There was one who had already been elected President of a Cage Bird Society, while another of their colleagues in South Wales was the President of the local poultry society. Twelve of his old students were developing a deep interest in birds as part of their practice. That was not a great number; nevertheless, it was indicative, he hoped, of greater things to come. There lay before the profession, he thought, an opportunity not without value. To take up the practice seriously was a matter of relatively little difficulty; and he was sure that, on the other side, the owners of birds throughout the country would welcome their profession officially adopting avian work. There was a vast field before us; even apart from the great poultry industry, which was the biggest section of agriculture to-day, there were the large game farms where thousands of pheasants were reared; there were the thousands of racing pigeon fanciers and also many thousands of aviary-bird fanciers. He was sure that if they once began to pay serious attention to these avian diseases and took note of what Mr. Henry Gray had been preaching for many years, the profession would not only reap benefit but would confer benefit on the bird-owner, who up to comparatively recent years had been in the hands of the empiricist.

Mr. Hugh Begg, of Lanark, who was present as a visitor, speaking at the invitation of the President, said that he was present that night quite by accident. He was, perhaps, more keen to meet his old friend Mr. Henry Gray than to hear his paper (laughter), because his studies had not descended or perhaps he should say ascended so far as to attempt to acquire a knowledge of the diseases of birds. He might say, however, that it struck him as peculiar that that subject received scant attention in the teaching centres of the profession. If he might venture to speak for the practitioners, however, he would say quite confidently that if Mr. Henry Gray could prove to them that he made money from the treatment of those small animals, matters would soon be different. (Laughter.)

Proceeding, Mr. Begg said that he thought Mr. Gray deserved to be honoured for having made such an extensive study of the diseases of birds and other small animals, many of which they knew only by name. He realised that when a practitioner he (the speaker) never dealt with birds at all except to amputate or set a broken leg or broken wing. He might say, however, that he had seen a great deal of loss from feather disease in doves and pigeons. He had seen a man's whole stock exhausted from this loss of feather trouble. It seemed to be an infectious disease—it might be parasitic in origin—he did not know.

Might he say in conclusion that he had the greatest pleasure in meeting again that night Mr. Henry Gray and his other friends both known and unknown.

Major T. Dalling said that he thought they should congratulate Mr. Henry Gray very much on what he had done for the Society that night. They all recognised that Mr. Gray was an authority on birds. The essayist had made many remarks that evening in regard to the position of the veterinary profession in relation to cage birds. He himself would include birds of all kinds, because the veterinary profession as a whole knew very little about poultry to-day.

There was still a lot to learn about the diseases affecting birds of all varieties. Mr. Gray had told them the symptoms of many of those diseases; he had also said much as to their causation, but with all respect to him, he thought that a lot of the causes given by Mr. Gray were rather out of date. Would that people would sit down and study those diseases in the way that they had studied the diseases of other animals. Mr. Gray did not mention, for example, that Salmonella infections might occur in cage birds. One thing that had interested him particularly was the fact that the parrot suffered from three types of tuberculosis; could Mr. Gray tell them if the lesions produced by these three strains varied at all in the parrot?

There were many other things that he would like to say, but time was going and he would therefore not say more than to thank Mr. Gray for bringing that subject forward and to express the hope that before long he would put his knowledge on this subject into book form. (Hear, hear.)

Before calling upon the essayist to reply, the President said they must thank Mr. Gray very sincerely for coming there that evening and giving them such a very able paper; he was afraid that they knew so little about the subject that they were practically unable to discuss it, but he knew that they would all agree with him when he said that when Mr. Gray's paper was printed it would be invaluable for them to keep by them for reference when they were called upon to treat birds, as they occasionally were.

The Reply

Mr. Henry Gray began by saying that he thanked the Fellows very sincerely for the way in which they had received his scattered remarks. He was not going to answer any of their criticisms because, if they chose, they could reply to the points raised in his paper when that was published in *The Veterinary Record*.

He would have liked to have called their attention to the diseases of game birds, but the scope of his paper was already very wide. A number of veterinary surgeons were living in vicinities where game was preserved and there was a tremendous mortality in those preserves that they knew nothing about. The worst of it was that the veterinary profession made up its mind that it knew nothing about these diseases. If they laid themselves out for this work they would readily be employed. With some of the cage birds, for example, there was a very large sentimental value, while others were economically worth £200 or £300 apiece.

If he might draw an analogy from his own experience of canine practice in the past, he might remind them that 50 years ago, when he entered the profession, the average veterinary surgeon felt insulted if he was asked to go to look at a dog or a cat. When the motor-car came along he was driven to the dogs and it had been much to his benefit. When he (Mr. Gray) went to Kensington 45 years ago he was not much inclined to treat dogs, but people made a great demand on his services and he threw himself into the work whole-heartedly because it paid well. As for bird practice, he did not see why the profession should not take that up. People were willing to pay for professional services, but they must lay themselves open to make themselves proficient. They could derive much assistance by becoming members of bird societies, also by studying the anatomy and physiology of birds, while of course it was essential

GREEN SPROUTED FORAGE FOR FEEDING PURPOSES

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Some years ago a method of producing succulent forage by sprouting and growing seed in metal cabinets was evolved on the Continent of Europe. This method is usually referred to as the "Spangenberg Process," although there would appear to have been others in addition to Spangenberg concerned in the process. In brief, the apparatus consists essentially of a series of enclosed galvanised iron shelves or sections arranged in a tier, into each of which eight shallow perforated trays to hold the seed, can be placed. An arrangement for heating to about 80°F. a large volume of water (either by gas, electricity or coal) is connected to each cabinet. The warmed water is stored in a tank above the sections, and serves to keep the temperature of the inside of the cabinet reasonably steady at about 65° to 70°F. Twice daily each section is flooded with the warmed water (containing a balanced chemical mixture), so that the seeds are covered. The water is drained off subsequently—enough remaining behind in the spaces between the seeds to keep them moist until the next flooding. Under the conditions of moisture and warmth, and aided by the chemical salts present, the seeds germinate, and a young plant grows from each. Depending on age, each plant consists of rootlets and aerial stem, with in the case of maize perhaps four small blades. The normal conversion of the starch in the endosperm into sugar takes place by enzyme action, and the cellular activity of the young growing plant closely imitates what would have happened had the seed been planted in the soil, with the exception that in twelve to 14 days the young plant will be some ten to 15 inches in height, the conditions of moisture and temperature being as nearly optimum for rapid growth as possible.

At about this stage, or a little sooner if desired, the trays are removed from the cabinets and used for feeding direct to stock. On an average, about 9 lb. of dry seed is used in each tray, the seeding for each section being 72 lb. Under the best conditions, with good quality seed, this amount will give about 36 to 40 lb. of forage in each tray, (*i.e.* roughly 300 lb. per section). The seeding of the sections is arranged so that either one or two days elapse between any one and the next. In this way, a steady stream of fresh succulent forage can be supplied daily or every second day. The average amounts fed per head of cow can be between ten and 20 lb. daily, so that each section can produce sufficient forage for from 15 to 30 cows.

Two cabinets supplied by British Cultivations, Ltd., were installed in the Royal Veterinary College late in 1934 and have been in use since, except for a period during the summer of 1935, and when automatic syphon attachments were being fitted.

Maize, oats and barley have been grown in considerable quantities, though neither oats nor barley were found to be entirely satisfactory in the particular type of cabinet installed. The chief difficulties encountered with these two cereals were: (I) Those associated with mould growth during the sprouting period, and (II) the difficulty of ensuring a uniform and satisfactory supply of grain of high germination at different times of the year. In this connection, the usual samples of oats sold for feeding purposes are inferior; it is necessary to use "seed oats." Similarly, even good quality grinding barley is not suitable; it is necessary to use a "malting barley" sample.

Maize has proved to be a very much more suitable seed to use for the production of forage for feeding purposes. A good sound sample of current season's screened maize, free from "chips" and weevils should be used. In any sample where, through damage, there is a high percentage of seeds incapable of germinating, a certain amount of alcoholic fermentation with brown discoloration and mould formation occur, and animals do not eat the forage very readily in consequence.

We have found that it is possible to grow the forage in the cabinets for 14 days, when the blades are usually about twelve to 15 inches long, but that better results are obtained and a more palatable product is produced when eight or nine days' growth is allowed. At this stage,

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that they should devote much attention to their diseases. Not only would it pay them well, but it was a very interesting subject and a great many people would be very grateful to them. He did not see why they should not be able to diagnose tuberculosis or tumours in the bird as well as they could in the cow or the dog.

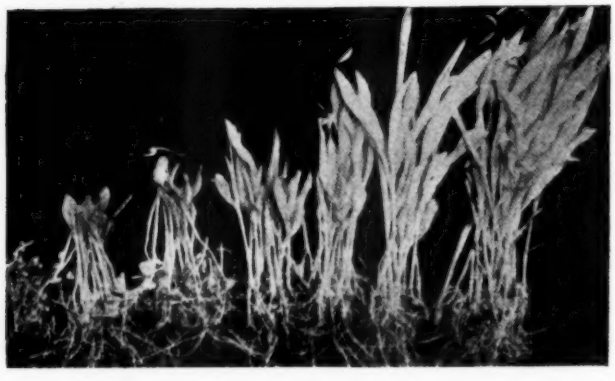
In this country we had always been backward. For example, we had only just started to teach zootechny, or animal husbandry, but on the Continent this subject had always been taught, since the foundation of the first veterinary school.

In regard to birds, he believed in pressing forward and proving their worth to the show people. Indeed, he would go so far as to say that he believed in apeing the big shop-keeper who exposed what he had to sell. The members of the profession were like the little-shop-keeper who only had one answer to any question: "I have not got that." (Laughter.) The profession had to be forced into things, and even then they took them up with the greatest reluctance.

In conclusion, Mr. Henry Gray said that he was sorry that there were not more young people present, but they were privileged to have a number of ladies amongst them and he would say that if the women of the profession would take up this subject there was a wonderful opening for them and it would not be difficult work for them to undertake.

though the maximum increase in weight per unit of dry seed is not obtained, the forage is sweeter, practically the whole of the endosperm starch is converted into sugar, and opportunity is not given for much fermentation to occur.

During the last few months, all forage has been grown with artificial (ordinary electric) light. This is supplied by one 40 candle-power lamp in each section. It results in a sturdy, dark green, healthy and attractive forage, and all animals eat it much more readily than they do the pale yellow etiolated forage produced in the dark. The green forage has a high chlorophyl content, and a far higher carotene content than the yellow forage, and lasts longer without wilting when trays are removed from the cabinets before being used for feeding. Moreover, the presence of light in some way stimulates germination so that the individual plants are of more uniform height and weight than when grown in darkness.



PHOTOGRAPH OF THE DAILY INCREASE IN GROWTH OF THE SMALL PLANTS. THE FIRST SAMPLE IS AFTER TWO DAYS; THE LAST SHOWS THE STAGE REACHED ON THE MORNING OF THE TENTH DAY.

The Use of Forage for Feeding Purposes

The primary object of growing the forage in the Royal Veterinary College was to add it to the rations of animals recovering from disease or operation. At such times animals' appetites may be somewhat more fastidious than usual, and some difficulty has been experienced (in about ten per cent. of cases) in inducing them to eat it. This we now know can generally be overcome by chaffing an equal amount of good hay and of green forage and mixing them together. So soon as the animal acquires a taste for it, chaffing is no longer necessary.

The forage has been fed steadily to sheep, horses, heifers and goats for some five months during the winter of 1935-36. Horses have been given 7 to 10 lb. daily; heifers 15 lb., sheep and goats about 5 lb. It can be used on the basis that about 4½ lb. to 5 lb. of green food are equivalent to 1 lb. of oats, but the forage should be looked upon as a succulent tonic and slightly laxative addition to the rations, more or less equivalent in food value to marrow-stem kale, and somewhat better than swedes or mangels (weight for weight), rather than as a principal constituent of the ration.

In our hands, the green forage has given good results when regarded in this way. It has been found possible to feed it along with a heavy concentrated ration of dry foods and hay, without the use of any other succulents, to fattening heifers and sheep. It usually has a slightly laxative action on the bowels when first introduced, but this passes off after the first few days. It is, however, desirable to commence with small amounts and to take about a week to introduce it to its maximum amount in the ration.

Animals fed upon it at a time when it is impossible to supply any other succulent *living* food, keep in better "bloom" than those without it, and, from other experiments, heifers appear to come into oestrus with greater regularity than those on an ordinary winter maintenance ration. Its chief application should be:

(i) for the feeding of young, growing, heifer calves during winter months, especially in the immediately post-weaning period until grass is available out of doors;

(ii) for dairy cows on a heavy winter production ration when there is normally a lack of other green succulent foods;

(iii) for all classes of stock during periods of drought, or when the root crop fails or is inadequate;

(iv) for polo ponies during winter, instead of, or in addition to, "soiling crops," and for hunters in summer where outdoor grazing is impracticable;

(v) to add to the rations for breeding stock which are being fed for show or sale purposes, especially perhaps for shearling rams and young bulls.

It is perhaps necessary to emphasise that some animals require to be educated to eat it. Small amounts (preferably chaffed) should be mixed with the ordinary rations, for the first few days and if necessary it may be desirable to sprinkle a handful of common salt or a little treacle and water over it before offering it to any animals which refuse to eat it otherwise.

Surprising reductions in the numbers of cattle and sheep on agricultural holdings exceeding one acre in England and Wales are revealed by a Ministry of Agriculture census taken on December 4th last. Cattle number 6,510,420, the lowest figure for four years. Of the total 3,080,390 are dairy cattle. Sheep have fallen from 16,477,000 in June, 1935, to 12,661,526. Of this figure 7,607,191 are breeding ewes. Pigs show an increase of 800,000 in twelve months.

Some Interesting Factors affecting the Incidence of Tuberculosis in the Human Subject

J. Wakefield Rainey, *C.B.E.*, m.r.c.v.s.

In this article an attempt is made, supported by clear and easily available statistical evidence, to give a proper value in order of importance to the main causes of the steady decline of human tuberculosis in English-speaking countries since the beginning of the century.

The result of this research seems to show that much of the recent propaganda against fresh cow's milk is unscientific and therefore misleading in some vital respects—notably in laying undue emphasis on negligible factors in the incidence of tuberculosis while wholly ignoring the most important factors of all.

Nature of the Propaganda against Fresh Milk

Various allegations (sometimes contradictory) made in the course of the campaign for frightening parents and guardians away from the best food for children are:—

(1) That raw milk is a poison, hardly more potable than sewage.

(2) That it must all be pasteurised.

(3) That pasteurisation is not enough: it should be boiled. (*See* correspondence from People's League of Health in Press.)

(4) That the consumption in childhood of cow's milk containing bovine tubercle bacilli predisposes the adult to phthisis. (Dr. Leonard Williams in *The Daily Telegraph*, October, 1935.)

(5) That cow's milk is the cause of nearly all deaths from non-respiratory tuberculosis and that the decline in this form of the disease is mainly due to the increase in pasteurisation.

(6) That any further reduction in the incidence of human tuberculosis depends upon the complete sterilisation of all milk or the elimination of the tuberculous cow, or both, according to the particular bent of the propagandist.

Statistics

Statistical facts, if the net is thrown wide enough, make the best basis for a scientific examination of such propaganda.

The first fact to be noted (and anyone may note it if he will go to a good public library and study the relevant vital statistics in the Year Books of the English-speaking countries) is that tuberculosis in all its forms has been declining steadily in English-speaking countries for nearly 50 years.

The next thing to note (*see*, for instance, the graph on page 101 of the New Zealand Year Book for 1935) is that the decrease on the whole was nearly as rapid from 1885 to 1910 as from 1910 to 1935. That is to say, the decrease was steadily and equally occurring in some countries long before people began bothering about pasteurisation or the eradication of tuberculous cattle, or before human tuberculosis was a notifiable disease.

Some important and constant cause of reduction was steadily at work in New Zealand and some other English-speaking countries before the public health services took a hand, before tuberculin was in common use, and long before any lactophobia propaganda appeared.

It will be shown later that this constant cause was a conjunction of economic reform and birth control and it may here be noted that in the one English-speaking country where this conjunction has been the least operative, *i.e.*, the south of Ireland, the death-rate from tuberculosis is three times as high as New Zealand and nearly twice as high as England.

Some interesting figures showing the rate of decline of tuberculosis since 1900 are:—

New Zealand death-rate per 100,000 declined from about 100 in 1900 to 33 in 1933.

United States from 180 in 1900 to 53 in 1933 in tuberculosis of the lungs, and from 21 to 5·9 in non-respiratory cases.

Canada shows a decline from 80 per 100,000 in 1928 to 65 in 1933.

Australia as a whole declined from 76 per 100,000 in 1911 to 51 in 1932.

There has thus been an average decline in the English-speaking countries of about 75 per cent. in 30 years.

In every instance that is recorded the rate of decline in non-respiratory tuberculosis, which particularly affects children, was greater than that in respiratory tuberculosis which is prevalent in adolescence and later life.

Not the United States with most pasteurisation but New South Wales shows the greatest decrease in non-respiratory tuberculosis, which has steadily declined from 26·9 per 100,000 in 1900 to 4·4 in 1931. The U.S.A. figures are 22 to 5·9.

Such constant and strikingly uniform results over such a long period of time clearly depend almost wholly upon constant factors which were already at work in 1900 and not at all or only negligibly upon recent factors, which did not exist at all in 1900.

The constant factors discoverable in the English-speaking countries under review appear to be the following and to be important in the order given:—

(1) Social, economic and educational reform.

(2) Birth control.

(3) Official public health work.

In stating the factors in this order it is far from the intention of the writer to minimise the part played by medical science. On the contrary, he would emphasise the fact that it has been the educational influence of medical science on all three of the named factors which has informed the reformers and has produced the results. It is well known, moreover, that large numbers of medical practitioners in every part of the United States and the British Empire anticipated as far as they could the provisions of a public health service long before it came into being.

In New South Wales, for instance, tuberculosis of the lungs has only been a notifiable disease since 1929.

But without social reform, without birth control, and without public health service, the private medical practitioner could not do much to influence the statistics of tuberculosis: the figures of the south of Ireland prove that.

The Relative Influence of Contraception and Pasteurisation on Tuberculosis Statistics

Neither pasteurisation nor the elimination of the tuberculous cow has been a constant factor in time or space in the English-speaking countries in the reduction of human tuberculosis.

If it is true that tuberculosis of man is declining in the United States, where bovine tuberculosis is said to be well on the way to eradication and most milk in the cities is pasteurised, it is equally true that in countries showing a lower death-rate from both respira-

tory and non-respiratory tuberculosis little in comparison has been done either to eradicate the tuberculous cow or pasteurise the milk, and that little only in the last few years and without affecting the rate of the decline to any perceptible extent.

The vital statistics of Ceylon afford the most striking indication of the relative unimportance of pasteurisation or tuberculous cows as factors in the incidence of human tuberculosis.

The cattle in Ceylon are nearly all of the Water Buffalo and Zebu breeds, which are not liable to tuberculosis. The report of the Ceylon Government Veterinary Department for 1934 shows that out of 40,000 cattle slaughtered and carcases examined in Ceylon only one was found to be tuberculous.

But for the five-year period, 1929-1933, the human death-rate from tuberculosis in Ceylon was 6·7 per 10,000, *i.e.*, more than double the death-rate for New Zealand during 1933, although in New Zealand, as in other Pacific countries, tuberculosis of cattle is enzoötic. Nearly 6 per cent. of the cattle in New Zealand are known to be tuberculous, and the proportion is possibly greater in some parts of Australia.

An even better comparison would be Ceylon with the Fiji Islands, where probably about 25 per cent. of the cattle in the wet belt are affected with tuberculosis. The cattle in Fiji, with few exceptions, are of European breeds. Tuberculosis of human beings is extremely rare in the Fiji Islands, except among the Fijian natives, who are averse to cow's milk and rarely use it in any way.

The lactophobia propaganda in Britain and America has got too big a start for even such convincing facts as these to overtake it, but at least they should be known to all who take an intelligent interest in the matter.

In view of the great publicity that has been given to the question of the sterilisation of milk and other largely imaginary factors in the incidence of human tuberculosis, it is amazing to find that the greatest single factor of all in the decline of that disease, namely, the factor of birth control or contraception, has escaped the notice of the propagandists.

Every year when the annual vital statistics are published and still another drop in the death-rate from tuberculosis is shown, speeches are made at luncheons and letters appear in the Press from medical publicists drawing our attention to the success which is attending improved medical practice and such advanced hygienic measures as pasteurisation, but not one word is said about the inevitable and automatic influence of a falling birth-rate upon the relative incidence of a disease which mostly affects young people.

During the past 50 years there has been about a 50 per cent. drop in the birth-rate of most English-speaking countries and at the same time a drop of more than 25 per cent. in the death-rate. Consequently the proportion of children and young people in relation to the population as a whole has fallen to a figure far below that of 1900. It would be reasonable to estimate a drop of at least 50 per cent. in the number of children and young people liable to tuberculosis. Such a reduction would, of course, especially affect the incidence of non-respiratory tuberculosis—and that is just what has happened.

The constant and continuing factor of contraception has had the greatest and most progressive effect in reducing the death-rate from tuberculosis where one would have looked first for such effect, namely, in the empty nursery and by the childless hearth.

Other things being equal and without any revolutionary reform in medical services or eradication of tuberculous cattle or sterilisation of milk, a reduction of 50 per cent. in the proportion of human beings under 30 years of age in a nation means an automatic drop in the tuberculosis death-rate of nearly 50 per cent.

It would seem, therefore, that birth control *plus* social reform can account for nearly two-thirds of the 75 per cent. reduction that has occurred in the death-rate from tuberculosis in the past 30 years, and certainly for more than two-thirds of the drop in deaths from non-respiratory tuberculosis.

When to this is added a reasonable share of credit for improved private and public medical services, there is little left for the allegedly important part played by the sterilisation of milk or the elimination of the tuberculous cow.

So much for figures and for statistical calculations.

But fortunately for the fate of our argument at the hands of those who, not unreasonably, refuse to be convinced by statistics alone, there is a lot more than this numerical estimate to be considered. We have to try to compute the greatly lessened risk of infection in the much smaller and far more intelligently supervised families of to-day as compared with the conditions of the nineteenth century. It would take a more able combination of pathologist and mathematician than the writer to express in numerical form the difference between the liability to tuberculous infection in the crowded and unhygienic nurseries and homes of the last century and those of to-day. But the difference is enormous. We are reminded of the greater dangers of those days by the sad frequency with which, even now, young hospital nurses contract tuberculosis under hospital conditions of mass-infection which were common in private homes in former years.

Such a difference in potential exposure to infection of our young people obviously goes far to account for the reduction in deaths from tuberculosis and especially from the non-respiratory form in cities, where birth control is more practised than in rural areas.

Allegation that the Drinking of Cow's Milk Containing Bovine Tubercle Bacilli Predisposes the Adult to Phthisis

If this claim, made by the well-known writer, Dr. Leonard Williams, in a letter to *The Daily Telegraph* in October, 1935, could be sustained, there would have to be an end to all opposition to the cooking of cow's milk. But the vital statistics of the English-speaking countries are solidly against such a theory which would only appear true if statistics showed that the incidence of phthisis was generally greatest in countries and in areas where there is the least pasteurisation of milk and the least supervision of the tuberculous cow; whereas it is usually the opposite, as we have shown.

Solidly against such a theory, also, is the clinical experience (quoted in a former article) of Devon, prior to 1900, when all milk in the country was scalded and hardly any raw milk or butter was ever consumed by the peasantry. So far from such an abstinence from raw milk helping to keep down the relative incidence of phthisis among the country people, it is a known and verifiable fact that phthisis was more rife in the south Devon villages than in most other parts of Britain—more so, for instance, than in Galloway, where substantial quantities of raw

milk and its products were regularly consumed by most of the peasantry.

Some of these exceptions to the rule alleged by Dr. Williams might be explained, but when all the available statistical evidence is against him we cannot accept his statement.

If it can be shown experimentally in the laboratory that there is a theoretical justification for his assumption, then the weight of clinical evidence to the contrary may be explained by assuming, probably correctly, that an abundance of raw milk regularly taken in youth gives a nutritional protection which more than counteracts a special susceptibility to tuberculosis.

Some go farther than this: Dr. Engelbrecht, writing in the *Norse Medical Journal* (September, 1934), gives statistical evidence from Scandinavia which seems to show that milk from tuberculous cows, so far from predisposing the human adult to phthisis, actually confers some immunity against the human bacillus, just as vaccination is believed to protect the human being against smallpox.

One must also consider the known greater susceptibility to tuberculosis of those native races who have not been used to drinking milk from tuberculous cows.

Conclusion

If one had set out on this enquiry on the assumption that the propaganda against raw milk was wholly true, one would have been countered at every turn by the facts revealed in the vital statistics of the English-speaking countries.

The truth seems to be that so long as the material conditions of life for the masses of the people continue to improve, and so long as the birth-rate continues to fall or does not rise, and so long as the public health services function so admirably, then tuberculosis of human beings will go on declining irrespective of pasteurisation.

In the meantime, if we are logical we should decide to act in the light of the facts. We may conclude that because the rate of decline of tuberculosis evidently depends mainly upon the material betterment of the lives of the people, because one of the chief requirements of that betterment is improved nutrition, and because fresh cow's milk is the most appetising and vitalising form of milk, any artificial interference with that elementary commodity should, so far as is reasonably possible, be resolutely avoided.

A VARIANT OF AESOP

Under the above heading *The Times* prints a message from its Dar-es-Salaam correspondent stating that a curious tale has come from Tabora, in the centre of Tanganyika. "Raids by lions upon the herds of cattle have been frequent and the natives have been setting traps. An aged native has just been fined 30s. by the Native Council for releasing a lion from one of the traps. It appears that the lion used to hunt regularly near the native's hut, and a friendly arrangement, it was said in court, had been evolved between the two. The lion would always leave sufficient meat for the man; and the man, in his turn, coming across the lion in the trap, had—like the mouse in the fable—shown that he was not ungrateful. It was not clear in the evidence whether the hyenas and jackals had also been brought into the working arrangement, for they normally eat up in a night whatever meat a lion leaves."

Abstracts

[The Protective Action of Bovine Contagious Abortion Vaccine. (Trans. title.) Zeller, H., and Stockmayer, W. (1935.) *Zschr. Infektkr. Haust.* **48.** 1 and 2. 77-94.]

The following four types of vaccine were tested, *viz.*, *Br. abortus* killed with chinosol, methylene blue, iodine and heat (58-60°C. for two hours) respectively. Doses were regulated according to the recommendations of the manufacturers. Brucella-free heifers two to four months pregnant were used for testing the value of the immunity which these vaccines conferred. Animals vaccinated with the chinosol and iodine vaccines showed a stronger antibody reaction that those receiving the other vaccines. Six animals were vaccinated with each vaccine, whilst eight unvaccinated controls were retained. Immunity was tested by applying virulent culture to the skin or mucosa four weeks after vaccination. At the first pregnancy following vaccination 16 of the vaccinated animals aborted while eight had normal pregnancies. Six of eight controls aborted and two had normal pregnancies. During the second pregnancy five vaccinated animals aborted, two of these having had a normal pregnancy the previous year. Two controls aborted, neither having done so previously. After the second pregnancy nine vaccinated animals showed retention of the afterbirth and four others sterility. Four of the controls showed sterility. During one or other of the two pregnancies 16 out of 24 vaccinated and six out of eight unvaccinated cows excreted *Br. abortus* in the milk. This organism was cultured from twelve vaccinated and from four control cows when the animals were subsequently slaughtered. These findings indicate clearly that no useful result followed the injection of any of the vaccines which were tested.

E. J. P.

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[Brucella Infection in Swine. Thomsen, Axel. (1934.) (Memoir, State Veterinary Serum Laboratory, Copenhagen. Levin and Munksguard, Copenhagen. Translated from Danish by Hans Andersen, M.D. Price 16s.)]

This remarkable work is a full record of an outbreak of Brucellosis in swine in Denmark, from 1929, when it originated, to 1932, when it was finally eradicated. The origin of the epizootic was not ascertained and, although the causal organism did not appear to be absolutely identical with the American type of *Brucella suis*, the possibility of infection having been carried from North America could not be entirely ruled out. The disease differs from contagious bovine abortion in a number of respects, one being the very much greater

importance of the male in spreading infection. Brucellosis in the boar is a malignant disease, often resulting in impotence. Necrotic inflammatory processes, maybe with calcification, in the genitals and accessory glands, are the main lesions, but *Brucella suis* may be present without any microscopic changes.

In the sow, an interesting condition, which the author calls "miliary brucellosis of the uterus," was found in 47 per cent. of positive reactors, both pregnant and non-pregnant. This consists of well-defined yellowish nodules up to the size of a pea, embedded in, but protruding above, the mucous membrane of the uterus. Abortion occurs in infected sows, but relatively is not nearly so constant a symptom as in cattle; but abscesses, lameness, emaciation and even death may occur.

Diagnosis in the living animal was by the agglutination test and complement fixation test, while blood from slaughterhouses was also examined in this manner. It was found necessary to employ both tests in order to make certain of all positive reactors. Somewhat contrary to expectation, and as a result of tests done in parallel, bovine antigen was found to be better than that prepared from a porcine strain. The intradermal abortion test was also shown to be of real value, as infected pigs showed very strong reactions.

The control of the epizoötic was undertaken by the State, every animal in severely infected herds being slaughtered, whilst in lightly infected herds, the reactors only were isolated and killed.

Cross inoculation experiments with contagious bovine abortion showed that swine brucellosis is a specific disease, and is not directly related to bovine abortion.

It would also appear that, unlike the North American type, the Danish *Brucella suis* is not particularly pathogenic for man. Only two persons on the 240 infected farms developed undulant fever, and contagious bovine abortion was also present on these farms.

The excellent illustrations form a valuable feature of the book, while a review of the relevant literature is given at the end of each chapter. The translation is not quite all that it might be, but it in no way detracts from an extremely interesting work.

A. W. T.

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[Further Investigations on the Causal Agent of Bovine Pleuro-pneumonia. Tang, F. F., Wei H., and Edgar, J. (1936.) *J. Path. and Bact.* **42.** 1. 45-51.]

In a previous article, the authors have described numerous forms of the pleuro-pneumonia organism. An amoeboid and a giant ring form have now been observed. Dark-field examination of early serum broth cultures reveals the presence of lobulated discs; these are the amoeboid forms. The giant ring forms are larger than the ordinary discs and are slightly refractile. Colony formation has been observed; the colonies consist of radiating filaments or beaded chains. No colony formation occurs in young cultures of old laboratory strains, and it is supposed that the mode of reproduction in freshly isolated strains is different. Smears of the cultures stain with great difficulty, although they are easily examined by dark-field illumination.

It is shown that the addition of sterile testicular extract to cultures enhances the activity of the organism, although an active immunity is not produced in infected bovines. The organism is very resistant to the action of direct ultra-violet rays, and to the photodynamic action of methylene blue.

The organism may be grown in chicken-embryos, and positive cultures have been obtained from the chorio-allantoic membrane. Pseudo-pleuro-pneumonia forms are present in uninoculated chicken-embryos; these are indistinguishable from the true pleuro-pneumonia organism, except by cultural methods. They also occur in the red blood corpuscles of the chicken and other animals, and are probably formed from the protoplasm by a process of protein dispersion.

Several good micro-photographs are given.

E. C. H.

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[The Production of a Neurotropic Strain of Rift Valley Fever Virus. Mackensie, R. D., and Findlay, G. M. (1936.) *Lancet.* **230.** 5864. pp. 140-141.]

The possibility of the mutation of a viscerotropic strain of a virus to a neurotropic strain is emphasised in this article. Nieschulz and Alexander have demonstrated this phenomenon in relation to the virus of African horse-sickness.

It has been found that it is necessary to employ an animal that is not susceptible to infection by the virus to be studied. By the use of yellow fever immune serum, administered before the intracerebral inoculation of yellow fever virus, it was found that the viscerotropic activities were suppressed, while the neurotropic properties were enhanced. The above procedure has been applied to Rift Valley fever virus.

This virus has caused great mortality in ewes and lambs, and it is pathogenic to man, and laboratory animals. Although mice are highly susceptible to the viscerotropic strain, by the use of the above technique the neurotropic properties of the virus are demonstrable. After 30 intracerebral passages, the neurotropic variant becomes "fixed," the symptoms being those of encephalomyelitis. There is necrosis of the brain substance, and absence of liver necrosis. In the earlier passages, focal necrosis of the liver is present. If intraperitoneal

inoculation is followed by trauma of the brain, nervous lesions develop and the mice die rapidly. In rhesus monkeys, similar results are obtained; the animals succumb to an encephalomyelitis after intracerebral inoculation of the neurotropic strain.

The nervous sequelae in certain virus infections may be explained by the above experiments.

E. C. H.

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[Apoplectiform Septicaemia of the Fowl. Truche and Duclos. (1934.) *Bull. Acad. vét. France.* **7.** 9. 368-371.]

This article records the outbreak of a fatal disease in fowls in which a streptococcus could be constantly isolated from the heart blood, bone marrow, liver, spleen and peritoneal exudate. The symptoms observed were inappetence, greenish diarrhœa, lameness, and sometimes locomotor ataxia. Death followed in two or three days. Pullets were seldom affected and nearly all the deaths occurred in adult fowls. On *post-mortem* examination there was an enlargement of the spleen and often a thick blood-tinged peritoneal exudate.

The morphology and cultural properties of the organism are fully described. On experimental inoculation, 1 c.c. of a 24 hour culture of the organism proved fatal for mice, rabbits and fowls. Two fowls were inoculated intravenously and intramuscularly and died in eleven and 26 days respectively. On autopsy both showed whitish streaks of the liver and spleen. The intestines were adherent and the mesentery thickened.

Vaccination was attempted, first by the use of killed cultures and later by the use of living cultures; but the results were not encouraging. The mortality increased after the use of the living vaccine.

Although little is known of this disease, it is not entirely new and during the last three years the authors have observed one or two outbreaks per year. In 1902 the disease was noted in the United States by Norgaard, Mohler and Mack, and in 1905 in Germany by Dammann and Maungold and in Sweden by Bergmann, Walle, and Magnusson. In 1933 Hudson recorded the occurrence of a severe epidemic in adult fowls in the United States. The symptoms observed in affected birds were drowsiness and inappetence, followed by death in a few days. The *post-mortem* lesions found were a haemorrhagic infiltration of the heart and breast muscles, haemorrhagic enteritis, enlargement of the spleen, and areas of necrosis in the liver. There was a reddish exudate in the pericardium and peritoneum.

In his work on the diseases of fowls, Lahaye states that this disease is fatal for fowls by the ingestion of cultures of the organism. Pigeons, rabbits and mice are also susceptible. Ducks are susceptible to intravenous injections of the organism; but sparrows are fairly resistant and only succumb to large doses intraperitoneally. According to this author, fowls that have recovered possess a solid immunity to the disease.

R. F. G.

Report

MADRAS

ANNUAL ADMINISTRATION REPORT OF THE CIVIL VETERINARY DEPARTMENT FOR THE YEAR 1934-35*

The report is written by Mr. P. T. Saunders, the Director of Veterinary Services, who was in charge of the department throughout the year.

Staff.—In addition to the Director, the superior staff consisted of Mr. T. J. Hurley, the Principal of the Veterinary College; Mr. K. Kylasam Ayyar, who was in charge of the Serum Institute; Mr. G. R. Viswanattran, the Veterinary Investigation Officer; twelve District Veterinary Officers; seven lecturers at the College and 274 members of the subordinate service.

During the year the department suffered the loss of Mr. V. Krishnamurti Ayyar, the Professor of Pathology, through death.

Veterinary College.—The number of students was 107 as against 117 in the previous year. The revised curriculum of study has run its course and it is stated that more time is now devoted to hospital practice. There was a satisfactory increase in the attendance of patients at the College Hospital. The scheme for the introduction of a degree course has been sanctioned by Government subject to the recognition of the College by the University. Work performed in the College laboratories continued to be an interesting feature and the number of specimens examined was well maintained.

Serum Institute.—The cold storage accommodation has been improved and the production and supply of serum and virus for anti-rinderpest inoculation continued steadily. There was also a large demand for blackquarter serum, blackquarter vaccine and hæmorrhagic septicæmia serum during the year. Experimental work in connection with rinderpest virus received commendable attention and a considerable amount of laboratory and microscopic work was conducted.

Disease Investigation.—The Veterinary Investigation Officer paid particular attention to blackquarter and preliminary investigation was

*Superintendent, Government Press, Madras. Price 12 annas.

undertaken in many other diseases. A separate report on this work will be submitted. At the Veterinary College some interesting research work was conducted, particular attention being paid to nasal schistosomiasis immunity. Its possible relation to horn epithelioma is being investigated.

Contagious Disease.—There was a fall in the incidence of contagious disease in the year under report. Attention is being paid to better statistical information and the checking of figures by District Veterinary Officers.

Hospitals and Dispensaries.—One hospital was closed down but has since been reopened. The number of patients treated increased very considerably, both at the hospitals and on tour, and more castrations were performed.

G. K. W.

From *The Veterinarian*

April, 1836

The two last have been important months as regards the veterinary surgeon, and those with whose interest he ought to be identified. On February 8th, a committee of the House of Commons was appointed—unfettered, unrestricted in the slightest degree—to inquire into the existence, the extent, the cause and the remedy of agricultural distress. It is true that the leader of the House of Commons gave no hope that "the distress which now pressed upon the agriculturist could be suddenly or effectually removed by any legislative interference of parliament;" but when he has left the inquiry into the matter as free as air, and expressed his wish that "the question should be fairly sifted," and deliberately pledged himself that, "if there were any practical means by which agriculture could be improved, it would be the duty of parliament to adopt them," the agriculturist needs not to abandon himself to utter despair.

On the 12th, the second meeting of the Central Agricultural Association was held. It was even more numerously attended than the first, and delegates from no fewer than 58 country agricultural associations were present. Universal satisfaction was expressed at the promise by government of an impartial inquiry into the causes of agricultural depression, and a deep feeling that all practicable redress could not be refused without injustice or delayed without danger pervaded the whole assembly.

If the language of the speakers generally was somewhat strong, their own interest in the affair, and the appalling instances of distress which crowded upon their view, whatever part of the country they inhabited, would form a sufficient excuse. This was no time for "sweet words, low crooked curtsies, and base spaniel fawning." It could, not, however, be denied, that there was a violence of manner—a studied obtrusion of demands that never could be granted—an ill-concealed irreconcilable ill-feeling towards those whose impartial consideration they besought—a hint, a threat of possible convulsion and revolution—a studied adoption of measures which must unavoidably lead to the defeat of their professed object, which alarmed the considerate, and excited the suspicion that much more was meant by some of the speakers than met the ear.

On March 18th the general committee of the society met in order to report progress, and to take into consideration the measures of government then under discussion in parliament, so far as they bore upon the agricultural question. The tithe bill formed a prominent object, and the average of the last seven years' produce was pronounced to be unjust and oppressive. All this was fair, and the matter deserves serious inquiry; yet the language of sarcasm and contempt, of menace and abhorrence, which was resorted to, was at least in bad taste, and would be adopted by an enemy to the agricultural cause, *in order to ensure its defeat;* and when, coupled with this, the invidious distinction was drawn between the agriculturist and the commercial man, and the capitalist and the fundholders were held up as objects of detestation—when the old visionary project, the alteration of the currency, was studiously placed in the foreground, and broadly stated to be that without which "they would not be satisfied, and the refusal of which would be followed by revolution," the honest and considerate well-wisher to their cause began to be alarmed and disgusted. The depreciation of the currency; the virtual destruction of every contract that has been entered into for the last seventeen years, and the robbery and destruction of at least one of the parties—the robbery (scarcely denied even by the currency man) of the public creditor—the commencement of injustice in every department and in every form, without the reparation of any one former injury; when this, at length is brought forward as an object, not of consideration, but as "a demand which must and shall be granted," why then it behoves the prudent man, and the well-wisher to the agriculturist and to the country, to look around him.

But why, ask some of our readers, why this in a veterinary periodical? Because the agricultural question is one with which the veterinarian has much to do—because, in all but our large towns, and there too in a considerable degree, he is identified with the weal and woe of the agriculturist—because he has to do with the usefulness and the very existence of the most valuable part of the property of the agriculturist—because, as was stated in a former number—this very society has plainly and fully recognised the association between the farmer and the veterinarian, and has talked of adopting means to render that association closer and more beneficial. We therefore have a right to mingle with this society, and to concern ourselves with all those questions which implicate its prosperity, or its utter uselessness and downfall.

The veterinarian is no uninterested spectator of the present contest; and if he can aid in the accomplishment of the ostensible object of the agricultural society, he will be honourably employed. If he has the power to direct and to confine the efforts of the farmer to the accomplishment of the objects which lie within his reach, and to warn him from those on which all his labour would be thrown away, or which, if obtained, would be delusive and unjust, he will be doing much good.

Government can do something—the commutation of tithes being effected (the present bill probably being somewhat or materially altered in its calculations and its averages), the duty on the sale of landed property, and some taxes pressing particularly on the agriculturist being repealed. The landlord can do more, by the reduction of rent, in many situations at least, and to a certain degree; and by regulating his

In Parliament

Medicines and Surgical Appliances (Advertisement) Bill

In the House of Commons on Friday of last week, Mr. G. Duckworth moved the second reading of the Medicines and Surgical Appliances (Advertisement) Bill, the object of which is to "prohibit the holding out of medicines, surgical appliances, or treatment as effective in relation to certain ailments, and the publication of invitations to diagnosis or to the treatment of certain ailments by correspondence." The provisions of this Bill, he said, had received the support and approval of a large number of bodies, including representatives of the proprietary medicines trade, the Advertising Association, the County Councils Association, and the Pharmaceutical Society. The Bill was very limited in its scope and it was not promoted by any vested interests. It was not the intention of the Bill to discriminate in any way between the qualified and the unqualified practitioner, and it could not damage the interests of any religious body or association, since they were specifically excluded from its provisions.

The Bill sought merely to remove some of the worst abuses that existed in connection with advertisement and sale of patent medicines and secret remedies. The Bill also struck at the method, only used by unscrupulous persons, of offering to diagnose and give treatment by correspondence. The Bill was designed to give the public some sort of protection against the worst forms of exploitation practised by fraudulent and unscrupulous persons for their own profit; but even if it became law it would still leave open an enormous field to the activities of the cheap-jack and the swindler. In comparison with the protection given to the public by law in other countries, and particularly in the British Dominions, it might well be said that this Bill did not go half far enough. The extent and growth of the abuses against which the Bill was aimed were first made known to the public through the startling revelations contained in the report of a Select Committee which reported in 1914.

The Select Committee recommended that all advertisements in connection with certain diseases should be prohibited by law, and that was the intention of the Bill. Their report, which went much further than anything in the Bill, was to some extent out of date, and the public had meanwhile received additional protection from the passing of the Dangerous Drugs Act and the Pharmacy Act. The reputable newspapers had established a voluntary form of censorship which excluded the more unsatisfactory type of advertisement. But all newspapers and periodicals did not come within the scope of that censorship, and there could be no question of the extent and gravity of the abuses that still existed. The public were still exposed to great frauds and considerable danger, and there was an urgent necessity that additional protection should be given by law. A man who fell a victim to fraud through the tragic misfortunes of disease and illness was far more deserving of the sympathy of the House and in need of the protection of the law than those who became the victims of financial frauds.

It would be argued by those opposing the Bill that it would establish a still greater monopoly in favour of the orthodox medical profession. It had no such intention. The removal of the abuses would be as much to the advantage of the unqualified practitioner as to the orthodox profession. If it could be clearly shown that the Bill in any way threatened legitimate interests, the promoters were perfectly prepared to accept amendments further to safeguard their position.

Mr. Elliston, in seconding the motion, said that the Bill was sorely needed and long overdue. The publication by the British Medical Association of their volume on secret remedies had exposed the worthless character of the so-called cures sold to the public and had shown the shameless exploitation of sufferers which took place through the medium of those remedies.

Sir A. Wilson moved the rejection of the Bill. He said that he had the greatest respect for the medical profession, but some of them did not feel that the orthodox medical profession had a complete monopoly of wisdom. The House should pause before it accepted the assumption implicit in this Bill that because remedies and alleviations were not approved by the medical profession and because they were advertised and sold for profit they were therefore deceptive. He agreed that the problem of advertised treatment should be dealt with, and if the Minister of Health put forward a Bill on the lines of that which was introduced elsewhere it was most unlikely to be opposed, except in matters of detail.

There were enormous frauds, but they were not those dealt with by this Bill. Nothing was more loathsome than the atmosphere of fear of disease and disability that was being created by certain forms of advertisement. The reference to the organisations supporting this Bill did not convince him. They were backing this Bill because it would not affect their financial interests—and if it did they would oppose it. He thought that a Select Committee should be appointed to consider the question afresh. It was 22 years since the last Select Committee reported on the subject and no action was taken on its report. They could not discuss matters of this sort in a Standing Committee. They should hear the evidence and, having heard it, they should take a judicial decision. This Bill would do little to protect the credulous and it would cover only the minutest fraction of the purchases of drugs in this country. Did the House realise that more money was spent on drugs than on alcohol? And would anyone seriously deny that drugs were probably doing nearly as much harm as drink?

The Bill would exclude many groups of persons who had developed the use and understanding of natural remedies, and had found them effective. It was not the business of the House to decide by Act of Parliament whether they were right or wrong. There were doubtless cases where unorthodox remedies had done harm, but he had received sufficient testimony from men and women he had known many years that unorthodox remedies had done them

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rent by the price of corn, or of some other farm-produce. The farmer—and aided by the government, which to a considerable extent may readily find the means of doing this—the farmer may do more, by making himself better acquainted with those sciences which bear upon the agricultural pursuits; by adopting cheaper and securer means of raising the produce of the ground, and securing it from many a source of injury, or even destruction. The veterinary surgeon may contribute to the same important end much more than the farmer has hitherto thought him capable of doing, and far more than the majority of practitioners have dreamed of his being able to accomplish.

(To be continued.)

good. The definition in the Bill of medicines was absurdly wide. It would cover the waters of any spa. The remedy was to compete with these unorthodox practitioners on their own ground. The General Medical Council should accept for the first time in its history the principle that it, or the Medical Research Council, should accept responsibility for broadcasting on public health at every opportunity, and do so without the grudging statement which every medical man who broadcast had to receive from the B.B.C. that he did it at his own risk. They should clear their minds of cant, and decide to use the public interest aroused by this Bill to take a far more active part than at present in promoting good health. The campaign for physical education would be useless unless accompanied by a campaign in favour of good habits of life.

Mrs. Tate seconded the motion for rejection. She said that the public would go on being defrauded whether the Bill was passed or not. She was afraid that the Bill was designed to safeguard the business of the qualified doctors and chemists far more than the health of the public. The danger of undesirable advertisements was very much less than in the past. The Bill was full of loopholes and if it were passed it would be a perfectly ineffective weapon. How was it proposed to prevent wireless broadcasting in England from foreign stations of advertisements of patent medicines, and who was to be summoned, and in what court would proceedings be taken? How could they deal with advertisements in American papers, which were often the far more serious offenders? The publishers were not in this country and the newsvendors were exempt.

Unqualified practitioners had been persecuted. The medical profession had not always welcomed help and discovery from those who were outside that incredibly strong trade union. They needed all the help they could get from inside or outside the medical profession, and there was a great danger that if the Bill were passed some men who might be of enormous value to the nation would in future years be debarred from giving their help.

Mr. J. G. Kerr was speaking when, attention having been called to the fact that there were not 40 members present, the House was "counted out."

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The following questions and answers have been recorded in the House of Commons recently:—

Cavalry Horses

Marquess of Titchfield asked the Secretary of State for War how many horses will be carried on the establishment of the recently mechanised cavalry regiments?

Sir V. Warrender: Forty horses will be retained provisionally on the establishment of each Cavalry Motor Regiment and Cavalry Light Tank Regiment at home, and 44 by the Cavalry Motor Regiment in Egypt.

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Exportation of Horses

Major Carver asked the Minister of Agriculture the number of old and decrepit horses exported from this country in each of the last four periods of six months, and the countries of destination?

Mr. Elliot: Under the Exportation and Transit of Horses, Asses and Mules Order, of 1921, made in pursuance of the Diseases of Animals Act, 1910, and the Exportation of Horses Act, 1914, no old and decrepit horses would be passed for shipment by the Ministry's inspector at the ports.

Foods (Rabbits)

Mr. Hall-Caine asked the Minister of Health whether, in view of the increased use of cyanide gas for the purpose of killing rabbits in this country, he will investigate at an early date whether rabbits killed by such means can be eaten without danger to public health?

Sir K. Wood: Yes, sir. I will have an investigation made into this matter.

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Tuberculosis

Mr. Viant asked the Minister of Health the percentage of primary abdominal tuberculosis amongst all the cases of tuberculosis notified during the past five years?

Sir K. Wood: I regret that this information is not available.

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Tuberculin Tested Herds

Mr. W. Joseph Stewart asked the Minister of Agriculture how many tuberculin tested herds have been established in this country during the last six years; and the amount that has been given in grants during that time to local authorities and to other bodies with that object in view?

Mr. Elliot: I am informed by my right hon. friend the Minister of Health that the number of tuberculin tested herds in respect of which licences were issued for Certified or Grade A (Tuberculin Tested) milk during the period April 1st, 1930, to March 19th, 1936, was 641. Under the scheme of the Ministry of Agriculture and Fisheries for the attestation of tubercle-free herds, which came into operation on February 1st, 1935, certificates of attestation were issued up to March 19th, 1936, in respect of 76 herds, 25 of which are included in the 641 herds above mentioned. No grants in relation to this matter are payable to local authorities or to other bodies either by the Ministry of Health or the Ministry of Agriculture, but under the Attested Herds Scheme a bonus of 1d. per gallon is paid in respect of milk sold from attested herds under the provisions of the Milk Marketing Scheme. A sum of £890 has been so paid up to March 19th, 1936. The above information relates to England and Wales alone. For similar information as regards Scotland, I would refer the hon. Member to my right hon. Friend the Secretary of State for Scotland.

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Sheep Scab (North Wales)

Mr. Haydn Jones asked the Minister of Agriculture how many cases of sheep scab have been reported in each of the six North Wales counties, giving separate returns for the months of November, December, January, and February last?

The Parliamentary Secretary to the Ministry of Agriculture (Mr. Ramsbotham): As the answer involves a tabular statement I am, with the hon. Member's permission, circulating it in the Official Report.

Following is the answer:

Sheep Scab

Outbreaks in North Wales

Month	Anglesey	Caernarvon	Denbigh	Flint	Merioneth	Montgomery
1935						
November	2	9	9	—	1	4
December	—	5	7	1	6	3
1936						
January	2	—	1	4	1	1
February	—	1	1	—	2	1

Notes and News

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

April 6th.—Meeting of the Editorial Committee, N.V.M.A., at 2, Verulam Buildings, Gray's Inn, W.C.1, 4 p.m.

April 17th.—Meeting of the Mid-West Division, N.V.M.A., at Bath, 3 p.m.

May 7th.—Last day for nominations for election to R.C.V.S. Council.

May 21st.—Voting Papers issued, R.C.V.S. Council Election.

May 28th.—R.C.V.S. Council Election Voting Papers due.

June 4th.—R.C.V.S. Annual Meeting and Luncheon in Edinburgh.

June 11th.—D.V.S.M. Examination begins.

June 24th.—R.C.V.S. Committee Meetings.

June 25th.—R.C.V.S. Committee Meetings.

June 26th.—R.C.V.S. Committee and Council Meetings.

June 29th.—R.C.V.S. Membership Examinations begin.

Sept. 14th-18th.—N.V.M.A. Annual Congress, Scarborough.

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PERSONAL

Veterinarians' Diamond Jubilee of Graduation

It is a matter of much interest to us all and of hearty congratulation for those concerned that to-day, April 4th, witnesses the diamond jubilee of their graduation as Members of the Royal College of Veterinary Surgeons of the following gentlemen who qualified in 1876: Mr. W. Coupe, of Milwich, Stafford; Mr. Wright Graves, of Cottenham, Cambridge; and Mr. T. J. Marriott, of Car Colstone, Notts.; that of Mr. G. A. Banham, F.R.C.V.S., falls on the following day, April 5th, while Mr. James Moore, a very well-known veterinary surgeon practising in Paris, will be celebrating his sixty years of graduation on April 6th. The list of those whose membership diamond jubilee falls early this month is completed by the name of Mr. W. Wilkinson Smart, C.I.S.O., of Charlcombe, near Bath, who graduated on April 8th, 1876.

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His Excellency the Governor, with the advice of the Executive Council, has been pleased to approve of the appointment of Professor James Douglas Stewart, M.R.C.V.S., B.V.Sc., as President of the Board of Veterinary Surgeons of New South Wales, for a period of three years, from January 1st, 1936.

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The British Australian and New Zealander announces that Mr. H. R. Tinney, who is a veterinary officer of the Federal Department of Commerce, will succeed Mr. R. H. Heywood in the London office of the department.

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Veterinary Surgeon Sheriff.—We are interested to learn that a veterinary surgeon this year holds the honourable position of Sheriff in the loyal and ancient city of Exeter, whose proud motto is "*Semper fidelis.*" In his capacity as Sheriff, Mr. R. Glave Saunders attended the recently-held first levée of King Edward VIII at Buckingham Palace. The only other municipal representatives to be presented to the King were Mr. Saunders's colleague (the Mayor of Exeter), the Lord Mayor of London, the Lord Mayor of Leeds and the Lord Mayor and Sheriff of Kingston-upon-Hull.

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R.C.V.S. OBITUARY

Crichton, Alexander Muir, Arden Lea, Ballinderry Road, Lisburn, Co. Antrim, N. Ireland. Graduated, Glasgow, April 10th, 1882; died, March 23rd, 1936.

Mr. Crichton, who was one of the best known veterinary surgeons in this area of Ulster, went there from Scotland about 50 years ago and carried on a very successful practice in Lisburn and district. He also held appointments under the Government. In his early days he was an enthusiastic supporter of sport, being a member of the Hertford Athletic Club and also a competitor in the cycling events.

He evinced an interest in public affairs and for a period was a town commissioner. He worshipped at Christ Church, of which he was an ex-member of the select vestry.

Mr. Crichton is survived by his widow, who resides at Arden Lea, Ballinderry Road, Lisburn. His only son, the late Captain Robert Crichton, M.R.C.V.S., served in the Great War.

"The passing of Mr. Crichton is much regretted in the town, where he had made many friends by his genial, affable, and kindly nature," says *The Belfast Telegraph*. The funeral was attended by a large concourse of mourners, and was of a very representative character.

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Kay, Oliver Charles Mead. Bodlonfa, Llansantffraid, Mont. Graduated Liverpool, December 17th, 1934, Died March 20th, 1936.

Sangster, Albert Edward, 141, Finchley Road, South Hampstead, N.W.3. Graduated London, March 21st, 1887; died March 23rd, 1936, aged 71 years.

Wright, William Frederick. 52, Burlington Gardens, Acton, W.3. Graduated London, July 6th, 1880. Died March 29th, 1936.

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The Late Lieutenant-Colonel Hugh Thomas Ryan, D.S.O., F.R.C.V.S.

Lieutenant-Colonel Ryan, whose death was recorded in our issue of March 21st, was born in County Tipperary in 1876, the fourth son of the late Valentine Ryan, J.P. He was educated by the Marist Fathers in Dublin, studied for his profession at the Veterinary College, Edinburgh, and graduated in London in 1898. Shortly afterwards he entered the Veterinary Corps and spent some time in South America examining horses for purchase by the British Army. Between 1905 and 1909 he saw service in India, being stationed in Quetta and Karachi: here he gained some trophies for his success as a polo player. From 1909 to 1914 he was stationed in Ireland at the Curragh, Fermoy and Ballincollig. During the greater part of the Great War, Colonel Ryan was stationed in Dieppe, where he was in charge of a veterinary hospital, and was awarded the D.S.O. He retired after the war and set up a private practice in Cork, which he was forced to give up owing to ill health in 1934. Nevertheless, he hunted regularly with the Muskerry Foxhounds and attended a meet about ten days before his death. He leaves a widow, two sons and a daughter.

LEGAL NOTES

Bulls Act Offence.—A fine of £4 was recently imposed, at Beverley, Yorks., on a farmer who had offended against the Registration of Bulls Act by failing to comply with a notice from the Ministry of Agriculture that he must castrate or slaughter two bulls which had been rejected as not up to standard, and for moving the two bulls without permission to a place other than a slaughter house for the purpose of slaughter. The two bulls were sold at Beverley. For the defendant, it was stated that he had not read the notices carefully, and thought he was complying with the Ministry's order by sending the bulls to be sold, with instructions to the auctioneer that they were for immediate slaughter.

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Emaciated Cows on a Sussex Farm.—Considerable interest was taken in a case at Mark Cross Petty Sessions, when Walter Henry Stone, of Freeman's Farm, Rotherfield, was summoned for causing unnecessary suffering to 22 cows and a bull, by omitting to give them sufficient food, care and attention, between January 3rd and 24th last. Alexander George Stone, owner of the farm, was summoned for permitting the offence.

The R.S.P.C.A. (represented by Mr. Gordon Jones, barrister), undertook the prosecution. Mr. C. W. Mayo, of Eastbourne, defended, and pleaded not guilty.

Inspector T. Beagley, R.S.P.C.A., Crowborough, stated that on January 22nd he found five cows in an emaciated condition, and saw one, which was very weak, being pulled out of a small bog pit. The pasturage was bare, and the field waterlogged and mossy. Some hay was brought, which the animals ate ravenously, except the rescued one, which was in-calf and could not rise. When he returned with a constable and a veterinary surgeon this cow was destroyed. They then found a bull and 16 cows in a cowshed, where the feeding stuff was of very poor quality, dusty and mouldy.

The field surrounding the shed, said the witness, was in a terribly marshy condition. They also saw a cow covered with bags, and this was in such a condition that it was destroyed after veterinary examination. Alexander Stone, when spoken to, said his brother had been in charge of the farm, and had been supplied with sufficient food for the stock. Walter Stone remarked: "The whole thing has been neglected lately." Recently, said the Inspector, he had found the condition of the stock improved.

Mr. H. V. Dier, M.R.C.V.S., Crowborough, also gave evidence for the prosecution, and Mr. John King-Shaw, veterinary officer to the East Sussex County Council, spoke to finding a number of the cows affected with tuberculosis, and said he was of opinion that they had not had sufficient food, or a sufficient of the right quality.

Alexander Stone's defence was that he had been residing at Basingstoke, but always allowed sufficient food for the farm, and his daughter bore out his statement.

Walter Stone blamed Nineham (a former employé) for the condition of affairs, declaring that the management and feeding of the stock was left to him, while he (defendant) had eleven acres of market garden to look after. It was Nineham he meant when he said the whole thing had been neglected.

The Bench dismissed the case against Alexander Stone, but fined Walter Henry £5.

A summons against the latter for not reporting within reasonable time a case of suspected tuberculosis was dismissed.

Sheep Scab: Failure to Report.—Two farmers were fined £5 each, with costs, at Appleby on March 22nd, for failing to report with all practicable speed the existence of sheep scab. They were Henry Walton, of Howburn, Rotherhope, Alston, the owner of the sheep concerned, and John William Coltman, Drybeck Hall, Appleby, to whom the sheep were sent for wintering last October.

The evidence for the prosecution was that in February, Mr. O. Stinson, county veterinary officer for Westmorland, received a communication from the Cumberland county officer, as a result of which he visited Drybeck Hall and found twelve sheep affected with scab. In his opinion a few of the sheep had been affected for at least seven months. Some of the disease had been partly cured, apparently by dipping.

Mr. Stinson would not agree to the suggestion, made in cross-examination, that during the cold weather recently experienced, there would be less irritation of the sheep, and that therefore the disease would not be obvious except to a very experienced person. He said that some of the sheep were so badly affected that they should have been noticed.

Walton, in evidence, said that he was not aware of the disease until his attention was called to it after Mr. Stinson's visit. Coltman gave similar evidence.

William Scott, veterinary surgeon, of Penrith, called for the defence, said that he did not find on the sheep "any old areas" which would indicate that the disease had been of long standing, and he did not think the disease could have been seen without individual handling.

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Unburied Sheep.—When two farmers pleaded guilty at Penrith Police Court to failing to bury the carcases of sheep, and leaving them so that dogs could have access to them, police witnesses said when they visited a holme by the side of the River Eden they found, near a fence, the carcases of 19 ewes and four lambs, and in another part of the field the carcases of 32 ewes and 11 lambs. Some of them must have lain there for a considerable time, as the grass underneath was white through the exclusion of light. Many of the carcases were decomposed, and many had been torn to pieces by dogs. They opined that the animals had died from liver fluke disease.

An agent for the defendants said it was a tragedy of old age and ill-health. The father was so enfeebled that he could not do anything; the son had had a severe attack of influenza, and the shepherding had been left to a farm lad, who had evidently neglected it. The defendants had suffered a great financial loss in the death of so many sheep.

The Chairman said the Bench did not wish to be hard on defendants, who had suffered great loss, but it was a bad case, and each defendant would be fined £2.

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Veterinarian's Motor: A Taxation Point.—A motor case which the defendant's solicitor said might have far-reaching effects was recently heard at Stockport, when Mr. C. E. Hall, veterinary surgeon, of Bothomes Hall, Whaley Bridge, was summoned for using a car in Bramhall-lane, Stockport, on February 29th for a purpose other than that for which it was taxed and by reason of which it became liable for a higher rate of tax.

Police-constable Swann told the court that the back seat had been taken out to permit of the carrying of a number of surgical instruments and bottles of medicine.

In answer to Mr. Barlow, defendant's solicitor, he agreed that the framework of the seat was still in the car and that it was the cushions which had been removed.

"This case," said Mr. Barlow, "arises from a veterinary surgeon having the temerity to carry about with him some of his instruments and bottles of medicine which are habitually carried. If there is a conviction to-day there is no saying where it is going to lead us.

"The seat was taken out because the owner was afraid some of the bottles of medicine might spill and spoil the cushions. If a veterinary surgeon going about his business carries with him certain emergency medicines and instruments I suggest that that is not using the car for a purpose which would bring him in the purview of the section under which he is charged. If the prosecution are right a doctor who carries the ordinary implements of his profession in his car is liable for a higher rate of tax."

Mr. L. W. Heeler, assistant Town Clerk, said that the prosecution suggested that the car was used for purposes other than that for which it was taxed and that the defence had been presented in a rather flippant manner. To this Mr. Barlow replied that he thought it was a rather flippant prosecution.

The magistrates decided that the case was proved, and Mr. Hall was fined 30s. Mr. Barlow said he would advise his client to appeal.

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THE KING'S STUD: REMOVAL TO HAMPTON COURT

The Royal Stud at Sandringham, visited by the members of the N.V.M.A. on the occasion of the Norwich Congress, is to be closed and the King's brood mares are to be transferred to the paddocks at Hampton Court. The Stud House, in Home Park, was for many years the residence of the Master of the Horse, and is at present occupied by the Dowager Lady Rossmore. The King will be able to see the mares, the foals, and the yearlings more frequently there than at Sandringham. Another reason for the removal of the mares is that it is necessary to give the paddocks at Sandringham a long rest. There will be no change at the King's stud farm at Wolverton, in Norfolk.

The Hampton Court Stud was famous in turf history in Queen Victoria's days. Sainfoin, a Derby winner, and La Flèche, one of the most famous mares that ever raced, were bred there. Queen Victoria had little interest in horse-racing. Consequently the yearlings bred at the Hampton Court Stud were sold annually. The Sandringham Stud was formed in 1877 with the idea of breeding better-class horses than were then carrying the Royal colours.

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ULSTER AGRICULTURAL SERVICES ESTIMATES

Under the heading of Agricultural Services the memorandum detailing the Ulster Government's estimates for the various services for the year 1936-37 states that additional experiments with the Spahlinger vaccine are to be undertaken this year, and provision is also made for a four-year scheme to test the anti-abortion vaccine which has been produced by the Ministry's Veterinary Research Division, while the figures for grants to milk recording associations show an increase over the provision for 1935-36. There has been a saving of £1,000 from a closer control of the operations under the Bovine Tuberculosis Order. As a result the net increase on this estimate is £1,485.

POLICE STATION TRANSFORMED INTO A HOSPITAL FOR SMALL ANIMALS

Mr. L. A. Auchterlonie, M.R.C.V.S., of Nottingham, sends us the following:—

In the hope that some interest may attach to a continuation of the story of the police station which became a hospital for small animals (*Veterinary Record*, December 16th, 1933), the writer ventures to describe the recent transformation of one of the cells into an operating room. Some humour may be discovered in the situation. For over 70 years the massive doors of these cells opened to admit breakers of the law (male and female) and bear countless marks in the form of deep boot imprints! We are told that on one occasion a deaf mute, who had cut the throat of his lodger, was housed here for a night. In days gone by, too, it would appear that the violent Sykes eventually found rest and peace within, after his captors had returned a Roland for his Oliver!

After the prison furnishings had been removed, the electricians proceeded to wire for power and light. All points were brought to a level of 4 ft. 6 in. from the floor to prevent damage from water: there were four power points for electric heater, thermo pad, electric steriliser and fan. The heater point was placed at the spot estimated to give as much floor space as possible for walking about and the others were all placed on the centre of the wall above the proposed long shelf. A light point was also put here. In the centre of the ceiling a plug-in point was placed for the operating lamp and a horizontal chromium-plated track rod supported by vertical rods was cemented in place exactly over the proposed centre of the table so that the lamp could be made to traverse its whole working length.

The next task was to excavate a drain hole at floor level through the 2-ft. thick wall at one corner so that drainage water would run into a nearby gully. The plumbers now fitted a hospital sink, complete with hot and cold water pipes. Arrangements were made for the water supply to be off the low pressure system so that elbow taps could be used without contravening the Water Department regulations. The plasterers now proceeded to cover the walls and ceiling and tiles were placed round the sink corner to a height of 4 ft. 6 in. Before the floor could be laid, plans had to be thought out for fixing the operating table, which it was intended should be the old table illustrated in the previous article. This, it will be observed, had "feet" which got in one's way and it was decided to remove these and support the table on a central leg embedded in the concrete.

It would be wearisome to recount the dodges resorted to in order to make a solid job and also keep the table in use in the surgery until the moment arrived for its removal. A hole 6 in. in diameter was now cut in the stone flags and the sand and rock below excavated to a depth of 9 in. A groove was cut in the floor and a hole made through the wall to house a cable for the thermo pad and a cable and copper tubing for an air compressor should it be required later.

All was now ready for drawing two sets of cable and the copper tubing through the 2-in. hollow steel leg, which was then cemented into the hole in the floor and filled up with thin cement to reinforce it. A system of "guy" cords from four points was used to keep the leg vertical until setting had taken place.

All that remained now to finish the basal work was to concrete the floor up to skirting level and this was carried out in green cementone. This was where tragedy stepped in. The plasterer's labourer who had the mixing of the colour, arrived in a state of semi-inebriation, and when the job was finished it was noticeable that most of the colour had gone into the first mixing, so that practically none was present in the last! Fortunately setting had not properly occurred and the writer and his kennelman were just able to hack it all up after five hours' hard work (on a Sunday night).

The colour of the second floor did not prove a success and recourse to chrome green permoglaze had to follow. This wears very well. In addition, all using the room wear rubber overshoes to minimise dust. The colour scheme is pale green permoglaze down to the skirting.

At this stage a "shudder" in the table was observed when it was knocked, but it was finally overcome by placing a thin metal support at either end and two curved "braces" screwed into the central leg. These do not interfere in any way with one's movements.

Furnishing the Room

Table.—The flat chromium-plated bars which run along each side of the top just below it were drilled at intervals of 2 in. for inserting hobble pegs. A chromium-plated tray, capable of sliding along the hobble bar and of being altered in height, was now fitted for the purpose of holding instruments. The opposite end of the table has an anaesthetist's tray, which is at a lower level, and a bracket to hold a sparklet is nearby. The oxygen cylinder is placed against the central leg and the curved braces. The thermo pad point was placed just under the table top in an accessible position. Small sandbags of green linen for "propping up" the patient are kept in another room.

Shelving.—Shelving is of white opalite glass, $\frac{3}{8}$ in. in thickness and 1 ft. wide. It runs from the sink to within 2 ft. of the other corner, where a large sheet 3 ft. by 2 ft. continues to the wall.

Cupboard.—A three-shelved, white enamelled one for holding needles, catgut, etc., and has a mirror front.

Fan.—This is now housed in a short, wide, metal tube, screwed into the wall. Air comes to it from the outside through two layers of extra fine copper gauze to keep out gross dirt.

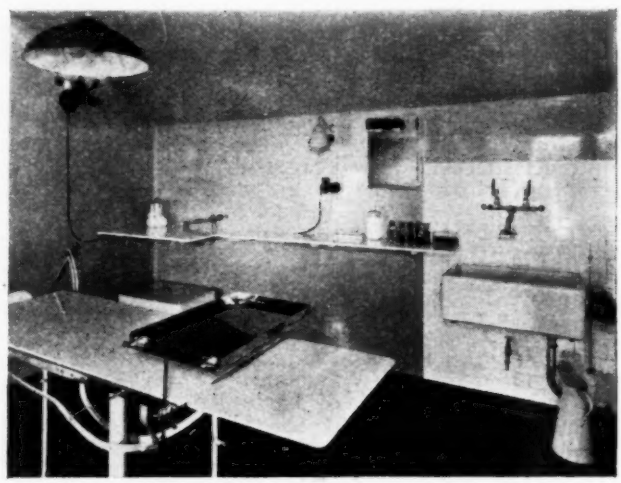
Operating Lamp.—The original four-point green enamel lamp with four 150 watt lamps. It is suspended on a chromed pulley-wheel and rod from the track rod before-mentioned.

Drum Box.—Of white enamelled wood with a deep overhanging lid, the box holds four large drums already charged. The box is kept under the square opalite table.

Door.—The heavy cell door was removed and two green oiled silk curtains on a sliding track were placed just inside. These are easily washed.

Rubber Flooring.—Sufficiently wide strips of a fawn colour were laid down to cover the requirements of those at the table and also in front of the sink. The whole floor surface can be easily mopped and the resultant absence of dust is noticeable, particularly as the passage approach is similarly treated. The mop used is one known as a "Straight Jane" and it can be wrung out without wetting the hands.

The great pleasure and satisfaction that this operating room has brought to the task is not the least of its advantages. It has been executed with due Scottish attention to the expense! With the exception of the plastering, tiling and electrical work and the laying of the concrete floor, all the work has been done by the staff, perhaps over a somewhat lengthy period. It is admitted that a terazzo floor would have been better and tiling all round an advantage, but unlimited expense could not be incurred.



Among the cases successfully terminated have been strangulation of a spermatic cord by omentum in a young bulldog and the plating of a fractured femur in an Irish terrier—both by Mr. C. F. Hecker, F.R.C.S.; removal of a piece of ox rib from the thoracic œsophagus of a four-and-a-half months Aberdeen by the œsophagoscope, by Mr. Gilroy Glass, F.R.C.S.; three hysterectomies for pyometra in bitches aged six, ten and twelve-and-a-half years respectively and

a Cæsarean section in a bull bitch with "open" uterus, by the writer.

It was once remarked in the writer's hearing that "it isn't everyone who can drop on a police station!" Necessity is the mother of invention and improvisation is quite as truly a member of the same family. In the transition stages through which our profession is passing, it behoves us to see what we can yet do with the material we now possess.

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We are indebted to Mr. J. Howard Jones, *O.B.E.*, M.R.C.V.S., Chief County Veterinary Officer, Glamorgan, for the above photograph of the liver and part of the diaphragm, affected with advanced tuberculosis, which was taken from a 16-month-old Hereford-Shorthorn heifer.

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MILK REGULATIONS: NEED FOR UNIFORMITY IN ADMINISTRATION

The failure of many sanitary authorities to carry out their duties under the Milk and Dairies Order and a lack of uniformity on the part of county authorities in their administration of the Milk (Special Designations) Order were referred to by Mr. James Mackintosh, of the National Institute for Research in Dairying, Reading, in an address on "Modernising of Cowsheds and the Administration of Dairy Regulations" at a meeting of the Farmers' Club at the Royal United Service Institution, Whitehall.

Mr. Mackintosh said that the modernising of cowsheds had been, and still was, one of the chief problems confronting dairy farmers.

The chief causes of inefficiency and lack of uniformity in the administration of the Orders most probably were the lack of appreciation of the need for cleanliness in milk production, the difficulty of administering an Order where the standards to be attained could not be precisely defined, and the cost of systematic inspection. One method of remedying the existing defects would be the issue of Orders from the Ministries of Health and Agriculture with explicit definitions and instructions. Where such definite instructions could not be issued from Whitehall, uniformity and efficiency must depend on the knowledge, discretion, and goodwill of the local and county authorities and their officials. To attain this end he considered that there should be closer co-operation between county agricultural advisory departments and the health departments of the various districts and counties.

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MINISTRY'S NEW PERMANENT SECRETARY

The Minister of Agriculture has, with the concurrence of the Prime Minister, appointed Mr. J. D. B. Ferguson, an assistant secretary in His Majesty's Treasury, to be Permanent Secretary of the Department, in succession to Sir Charles J. Howell Thomas, who retires from the public service on September 30th next. Mr. Ferguson, who was born in 1891, was educated at Magdalen College, Oxford. He served in the war from 1914 to 1918, and entered the Treasury the following year. He was appointed Principal Private Secretary to the Chancellor of the Exchequer in November, 1930.

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NATIONAL INSTITUTE FOR MEDICAL RESEARCH

The Medical Research Council have appointed Sir Patrick Laidlaw, F.R.S., to be deputy director of the National Institute for Medical Research and head of the institute's department of Pathology and Bacteriology in succession to the late Captain S. R. Douglas, F.R.S.

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THE NATIONAL HORSE ASSOCIATION

At a recently held meeting of the Council of the above association Major H. Faudel-Phillips was elected President.

The report of the Council to the members indicated that there was now a membership of 830, and the new President expressed the hope that all horse riders would support him in his year of office so that the membership might soon be doubled.

Imported Horses.—Mr. James Forshaw, the retiring President, stated that the Import Duties Advisory Committee had asked for further information in respect of the application made by the Association for a duty on foreign horses coming into the country. Mr. Forshaw stated that as soon as prices showed a tendency to rise and heavy horse breeding was recovering from the disastrous effects of the slump, Continental horse dealers began to take advantage of the increased prices by sending over large consignments of animals. It was probable, therefore, that if these importations were to continue to be allowed on a free entry basis prices would soon slump again and the home industry suffer considerably. It was extremely unfair that breeders of heavy horses in this country, after

struggling to maintain a high standard of stock, should now be faced with an increasing flow of imported heavy horses, particularly in view of the fact that many more young horses are being bred and will soon be ready for the market. Thus, the whole position of the heavy horse industry would soon be undermined.

Mr. R. C. Irving stated that the majority of imported horses were geldings, and that mares had only recently been sent. These were proving very bad breeders and he had only heard of one mare producing a foal, which was a bad one. Prices for the animals averaged about £50 per head and they were selling because they were quiet. They were, however, of no use for street work as they could not stand trotting.

It was also reported that horses were being imported from Finland and that a consignment of about 60 would soon come from that country. Cobs were also being imported from Russia. These latter were of the vanner type, about 15 h.h., and were selling at about £30 per head.

After hearing strong expressions of opinion from breeders of Shire and Suffolk horses, the Council were of opinion that there was an abundance of young stock in this country coming on and they reaffirmed their unanimous opinion that the Import Duties Advisory Committee should place a duty on imported horses.

Horse Traffic in London.—The Council understood that the question of restricting horse traffic in London was still under consideration. They had already asked for a deputation to be received and had collated the views of the principal horse owners in the metropolis. These indicated that there is a widespread resentment amongst all horse-owning firms at the suggestion. The Council desired again to protest against any suggested restrictions, as they felt they would be a great injustice to horse owners, would create unemployment and would have a serious effect on agriculture. They also particularly desired to point out that any restrictions east of Southampton Row would seriously affect horse-drawn traffic proceeding to markets such as Covent Garden, Smithfield, etc.

Horse Owners' Reference Book.—This publication, issued by the association, had proved very popular. The new features, including the dates and addresses of all coming shows, list of riding schools, horse fairs, etc., had been welcomed.

Accommodation for Horses.—The Council were anxious to obtain information as to hotels, farm-houses, etc., with stabling accommodation, or with riding stables attached, and also to have details of every riding school in the country in order that they might be in a position to answer numerous enquiries received by people who wish to take riding holidays. Information was particularly required from Hampshire, Devonshire, Cornwall, Sussex, Kent and Wales.

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NUTRITIVE VALUE OF MILK

A memorandum on the Nutritive Value of Milk by the Advisory Committee on Nutrition appointed by the Minister of Health and the Secretary of State for Scotland has been published with a prefatory note by Sir Kingsley Wood and Sir Godfrey Collins (H.M. Stationery Office, price 3d.).

The chairman of the Advisory Committee is Lord Luke, and the members include Professor Cathcart, Sir F. Gowland Hopkins, Professor Mellanby, and Sir John Boyd Orr. Its terms of reference are: "To inquire into the facts, quantitative and qualitative, in relation to the diet of the people, and to report as to any changes therein which appear desirable in the light of modern advances in the knowledge of nutrition."

The memorandum explains the high value of milk as an article of food. Analysis of its composition shows that milk contains protein of nigh nutritive value, energy-giving nutrients, the known essential vitamins, and many mineral elements, and apart from its chemical composition it derives value from other properties such as easy digestibility. Many investigations have been made which justify the belief that the general health of the community, and especially of children, would be improved and the incidence of disease, including rickets, diminished if the present consumption of liquid milk, averaging about 0·4 pint a head a day, could be increased to about a pint.

Milk has few disadvantages as an article of diet. For infants, after breast-feeding has ceased, it should form the bulk of the diet, with any necessary supplements to furnish iron and vitamins C and D. After infancy milk is not a complete food, but is a very important item in diet, particularly for children, who should be given one to two pints a day, and for expectant and nursing mothers, for whom about two pints a day are desirable. Other adults, who need milk especially for the sake of its calcium and animal protein, should have at least half a pint a day.

Milk is unfortunately liable to contamination by disease-producing bacteria, and its heating by suitable methods such as pasteurisation has important advantages in making it safe for human consumption from this point of view. Moreover, when milk is treated by heat little significant change is known to occur in its nutritive properties, and such deficiencies as may be caused can readily be made good. It is therefore reasonable to assume that raw milk incorporated in other cooked articles of diet, such as bread and puddings, retains most of its nutritional properties. The report also calls attention to the degrees of nutritive value possessed by various milk products, especially separated milk.

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THE INJURIOUS EFFECTS OF POISONOUS PLANTS AND SEEDS ON CATTLE

Under the above heading, *The Journal of the Ministry of Agriculture*, 42, 12 (March, 1936), prints the following:—

"The interesting instances of injury to cattle owing to plant poisoning related below have recently come to the notice of the advisory staff in East Sussex and have been communicated by Mr. R. H. B. Jesse, Director of Agriculture under the County Council:—

"(*a*) A number of cattle belonging to a dairy farmer in the county suffered severely from what appeared to be some kind of poisoning. The owner of the cattle, very wisely, promptly consulted his veterinary surgeon, who in turn advised consultation with another veterinary practitioner.

"There were 58 cattle in the dairy herd and nine dry cows, and approximately 120 gallons of milk were being produced daily. Unfortunately, the illness was so serious that 16 cows and one bull died, and, in addition to this heavy loss, most of the milk yield from the remaining cows temporarily ceased. Further, within a short period after the illness, twelve cows had dead calves, and it was considered by the farmer's veterinary surgeon that this loss was

due not to contagious abortion but to the result of some poisonous substance that had been eaten by the cattle.

"Investigation showed that the affected cattle were receiving water from at least two different sources, so that the illness did not appear to be connected in any way with the water supply, whilst the hay being used came from different stacks. As a number of young stock being kept on the farm were unaffected, it was found possible to eliminate a number of suspected sources of illness. The first samples of fodder submitted to the County Analyst did not reveal impurities likely to occasion loss, but from further samples seeds of foreign species were found, and eventually castor bean was found by the County Analyst in screw-pressed earth-nut cake obtained from the farm.

"The extent of the loss in this case may to some extent be envisaged when it is pointed out that a sum exceeding £900 was paid to the farmer in settlement of his claim for loss.

"(*b*) Another farmer lost five ewes within three days. An investigation was made, as the farmer suspected that the losses were due to parasitic worms. The condition of the sheep, however, indicated that this was improbable, since the sheep were in good store condition, whilst a *post-mortem* examination showed not only that they carried a considerable amount of fat internally, but that parasites such as liver fluke, the large and smaller stomach worms, and certain intestinal worms did not appear to be present. Suspicion concerning the cause of death was therefore diverted to the feeding stuffs being used, especially when it was ascertained that the farmer had just commenced to feed concentrates, and that the mixture consisted partially of screw-pressed earth-nut cake. The feeding of the screw-pressed earth-nut cake was immediately discontinued and the losses ceased. The intestines of the sheep appeared to indicate poisoning of some kind, and on submission of some of the earth-nut cake to the County Analyst, castor bean was detected.

"(*c*) The occupier of a farm wrote stating that her cows were apparently suffering from the effects of poisoning, and that in all 22 cows were affected. It was first thought that acorns might have been the cause of the trouble, but when it was found that animals kept in house were also affected, and that similar concentrated food was being fed to cattle belonging to the owner of another farm with no ill-effects, and that the water supply was being obtained from the main, it seemed probable that the illness might possibly be caused by the hay that was used.

"It was ascertained that the beginning of the illness coincided with the commencement of a fresh stack of hay. In the hay were found considerable quantities of Yellow-Rattle (*Rhinanthus crista-galli*), Wild Vetchling (*Lathyrus pratensis*), Horsetails (*Equisetum* spp.), and Dyer's Greenweed (*Genista tinctoria*). As Yellow-Rattle is suspected of causing trouble to cattle and belongs to a family containing a number of known poisonous plants, and since, further, the seeds of the Wild Vetchling had matured, it was concluded that there was probably some connection between the occurrence of these plants in the hay and the poisoning of the cattle, whilst the presence of *Equisetum* and Dyer's Greenweed was considered also as being probably a contributory cause to the loss. It is interesting to note that the cattle improved when other hay was used.

"(*d*) Another farmer reported that the cattle on one of his farms invariably scoured badly when hay from one particular rick was fed to them. An examination of the hay was made. It appeared to have been made in excellent condition, but the cowman, a most observant man, was emphatic that acute scouring only occurred when hay from this particular stack was being fed. Examination of the hay showed that it had been made from 'brook land' or alluvial soil and contained a considerable amount of Horsetails (*Equisetum* spp.) and also a quantity of Persicaria (*Polygonum persicaria*). The 'scouring,' probably due to the Horsetails, ceased when the feeding of this hay was discontinued."

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At a recent meeting of the Faversham Council it was reported that the inspection of dairy herds in the district by the Veterinary Officer of the County Council was nearly completed, and that only one animal out of about 1,100 had so far been found to be affected by tuberculosis. The Council considered this result very satisfactory.

Correspondence

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

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PROFESSIONAL TRAINING IN THE HUSBANDRY AND DISEASES OF FUR-BEARING ANIMALS AND OF BIRDS

To the Editor of The Veterinary Record

Sir,—It is true that the Council of the R.C.V.S. decided that the present syllabus makes adequate provision for instruction and examination in husbandry and diseases of fur-bearing animals and birds. The syllabus is given at pp. 56-61 of the current Register, and a careful examination of it will show that it is sufficiently comprehensive to cover the subject referred to by Dr. Hare. But the decision of the Council was not based on the syllabus alone. The Council were in possession of replies from the affiliated colleges to a question as to the amount of instruction given in regard to poultry, and on the evidence of those replies the Council felt that it was not necessary to amend the syllabus for the purpose of providing for *special* attention to be paid to the diseases of poultry. The syllabus is not intended to be exclusive; it leaves the schools free to provide, as they do in fact provide, for far more work to be done than the minimum laid down.

The duty of the R.C.V.S. is to plan its examinations so as to test whether the candidate has received a comprehensive general course of instruction, leaving it to the individual member to specialise in later life if he wishes to do so.

Yours faithfully,

J. W. McIntosh, *President.*

The Royal College of Veterinary Surgeons,
10, Red Lion Square.
London, W.C.1.

March 31st, 1936.

To the Editor of The Veterinary Record

Sir,—In a letter appearing in your issue of March 21st, Dr. T. Hare makes certain allegations against "the veterinary schools, Royal College of Veterinary Surgeons examiners, and the Examination Committee."

It is untrue to say that efforts to increase the knowledge of Husbandry and Diseases of Fur-bearing Animals and Birds are being stifled by the Examination Committee. The committee quite rightly decided that the establishment of a special course and a special examination in these subjects is not necessary: but, inasmuch as these subjects are covered by a curriculum and an examination framed by the Examination Committee, it is manifestly unjust to accuse them of "stifling"—if Dr. Hare means what he seems to mean.

An attack on the Royal College of Veterinary Surgeons examiners is grossly unfair and quite uncalled for in the circumstances. The examiners, often at considerable personal sacrifice, give their services to the profession. They examine within the scope of the syllabus: within the scope of the syllabus come the very matters which Dr. T. Hare alleges are stifled.

Criticism of teaching in this connection, so far as this College, at least, is concerned, is unfounded.

Each session since 1932-33 a course of instruction in diseases of birds has been given by Mr. J. E. Wilson, who is the head of the department of Poultry Diseases in the College, and, for the last nine years, has devoted the whole of his time to avian diseases. Throughout each session Mr. Wilson demonstrates cases of disease in all classes of birds.

Certainly no *special* course of instruction is given in diseases of fur-bearing animals, but their consideration—*so far as existing and authentic knowledge permits*—is included with that of the diseases of other mammals.

It may be that Dr. T. Hare, as a result of the opportunities available at the "Veterinary Research Laboratories," has acquired a greater knowledge of the diseases of fur-bearing animals than is possessed by other people. If so, he should make this knowledge available to the Veterinary Profession.

I append an extract from the college calendar showing the extent of the course on Diseases of Poultry given by Mr. Wilson.*

I am, Sir,
Yours faithfully,
Geo. F. Boddie.

Royal (Dick) Veterinary College,
Edinburgh, 9.
March 30th, 1936.

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*ROYAL (DICK) VETERINARY COLLEGE

DISEASES OF POULTRY

Demonstrator.—J. E. Wilson

A course of instruction consisting of lectures and practical demonstrations is given during the Summer Term. This course includes consideration of the following diseases:—

Avian Tuberculosis; Fowl Pox; Bacillary White Diarrhœa; Fowl Typhoid; Fowl Cholera, Fowl Plague; Newcastle Disease; Neurolymphomatosis (Fowl Paralysis); Leukæmia; Gout; Vent Gleet; Coccidiosis; Infectious Entero-hepatitis of Turkeys (Blackhead).

Parasitic Diseases of Poultry.—Depluming Scabies; Scaly Leg; Red Mite; Gapes; Round Worms; Tape Worms.

Impaction of the Crop and associated conditions; Impaction of the Oviduct (Egg bound) and associated conditions.

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STABLE VICES: WHEN DOES CRIB-BITING COMMENCE?

To the Editor of The Veterinary Record

Sir,—Now and again, after the examination of a horse for soundness, the veterinary surgeon who has made this examination and given the certificate is very much worried to receive an angry letter from the client saying that the animal is a crib-biter—and this notwithstanding the fact that the veterinary surgeon in question will recollect well that the condition of the incisors was perfect and showed no indication whatever of this stable vice.

It may even lead to a law case and, in this event, it is well that the veterinary surgeon shall know how he stands. It is a well-recognised fact in the profession that this is a "stable vice" and not an "unsoundness" for which he can be held liable; and that it is a contingency against which the purchaser should protect himself by obtaining at the time of purchase (either in writing or in the presence of a witness) a guarantee from the vendor to say that the animal is "free from vice." This phrase is comprehensive and includes all "stable vices"—which are understood to be those of biting, kicking, sleeping standing, crib-biting, wind sucking, and weaving.

A more difficult problem arises when this guarantee has been given and the vice commences immediately (or shortly) after purchase—and, of course, there must always be a commencing stage; as an instance of which I quote the following:

The animal, one of my own, was a five-year-old mare which I had had in my stable in constant use in my practice. At the end of twelve months my groom one Monday morning said to me. "Nellie has suddenly commenced to crib." We were both prepared to say that up to the previous day nothing of this kind had been present as she was always under close observation. After that date she gradually got worse and eventually became a confirmed crib-biter and always had to wear a crib-biting device.

Yours faithfully,
George W. Foote.

Meadow Grove,
Guernsey.
March 31st, 1936.

Advertisers' Announcements

Anahaemin B.D.H.

The British Drug Houses Ltd., Graham Street, City Road, London, N.1, have published a booklet in reference to Anahaemin B.D.H., the active haematopoietic principle of liver of Dakin and West.

The booklet contains a short history of liver therapy from its inception until the present epoch-making discovery of the active principle—Anahaemin.

The advantage of Anahaemin B.D.H. over all extracts of liver lies in the fact that the injection of small doses (200 mgm. in 2 c.c.) at monthly intervals constitutes effective treatment in the majority of cases of pernicious anaemia; even extreme cases can be treated effectively by three injections of 200 mgm. in 2 c.c. at weekly intervals followed by the injection of similar, or even smaller, doses at monthly intervals; thus, although the cost per ampoule of the solution of Anahaemin B.D.H. may be slightly higher than that of extracts of liver, yet it is very economical in use.

We feel sure that readers of *The Veterinary Record* will find the booklet of interest and that they will be glad to know that such a symposium is available on application, free of charge.

In the advertisement which appeared on page ii of the March 28th issue of this journal for Cellona Plaster of Paris Bandages which are manufactured by Messrs. T. J. Smith and Nephew, Ltd., of Hull, the caption under the illustration of a dog should have read, "Cellona Cast supporting a fracture of the olecranon."